TECHNOLOGY DEPT.

# Gas Journal

Vol. 271. 104th Year. LONDON, SEPTEMBER 17, 1952. No. 4659. Price 1/3
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DETROIT

Meters for the Industrial Load

Hand-operated oiling system is standardised on industrial meters 700 c.ft. upwards.
Full automatic oiling is available at an extra charge and is recommended on meters 1,200 c.ft. and upwards.

ALDER & MACKAY LTD.
EDINBURGH ~ LONDON ~ BRADFORD & BRANCHES

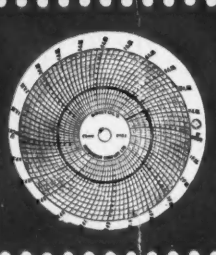
FIG 999

The NEW

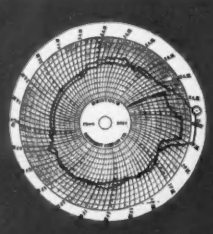
Low Pressure

SERVICE REGULATOR

WITH FIG. 999



WRITE FOR FULL SPECIFICATION



WITHOUT FIG. 999

ARREST YOUR PRESSURE FLUCTUATIONS RING FOR FIG. 999

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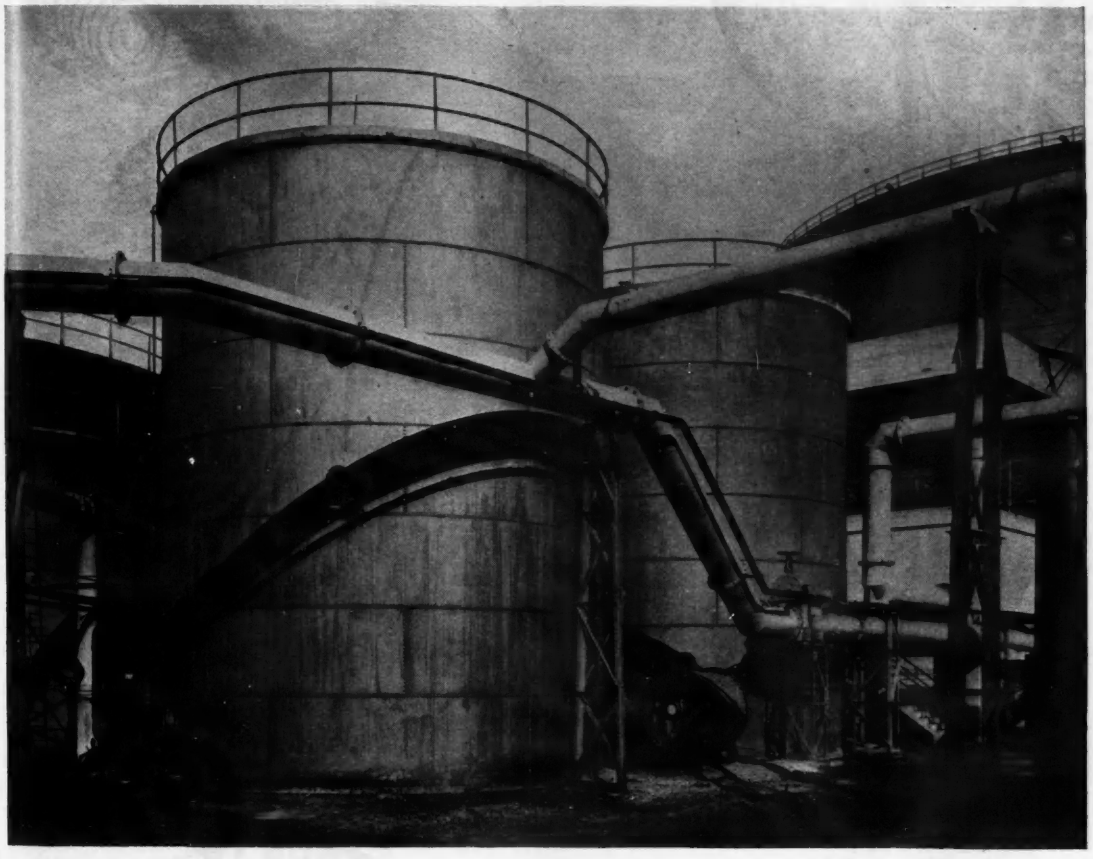
The hallmark of high quality plant.



# TANKS

by

*We make stills and tanks of cast iron and steel; tanks with open or closed tops; with dished, coned, or flat ends; of cylindrical or rectangular form; of bolted, riveted, welded, or pressed construction; with trussed self-supporting crowns; and for the storage of liquor, oil, spirit, tar, water, etc.*

We also make:— BY PRODUCT PLANT · CONDENSERS · DETARRERS GASHOLDERS · GAS VALVES · IRON CASTINGS · TRAY and other PURIFIERS · WASHERS · WATER GAS PLANT · and RIVETED & WELDED STEELWORK etc.

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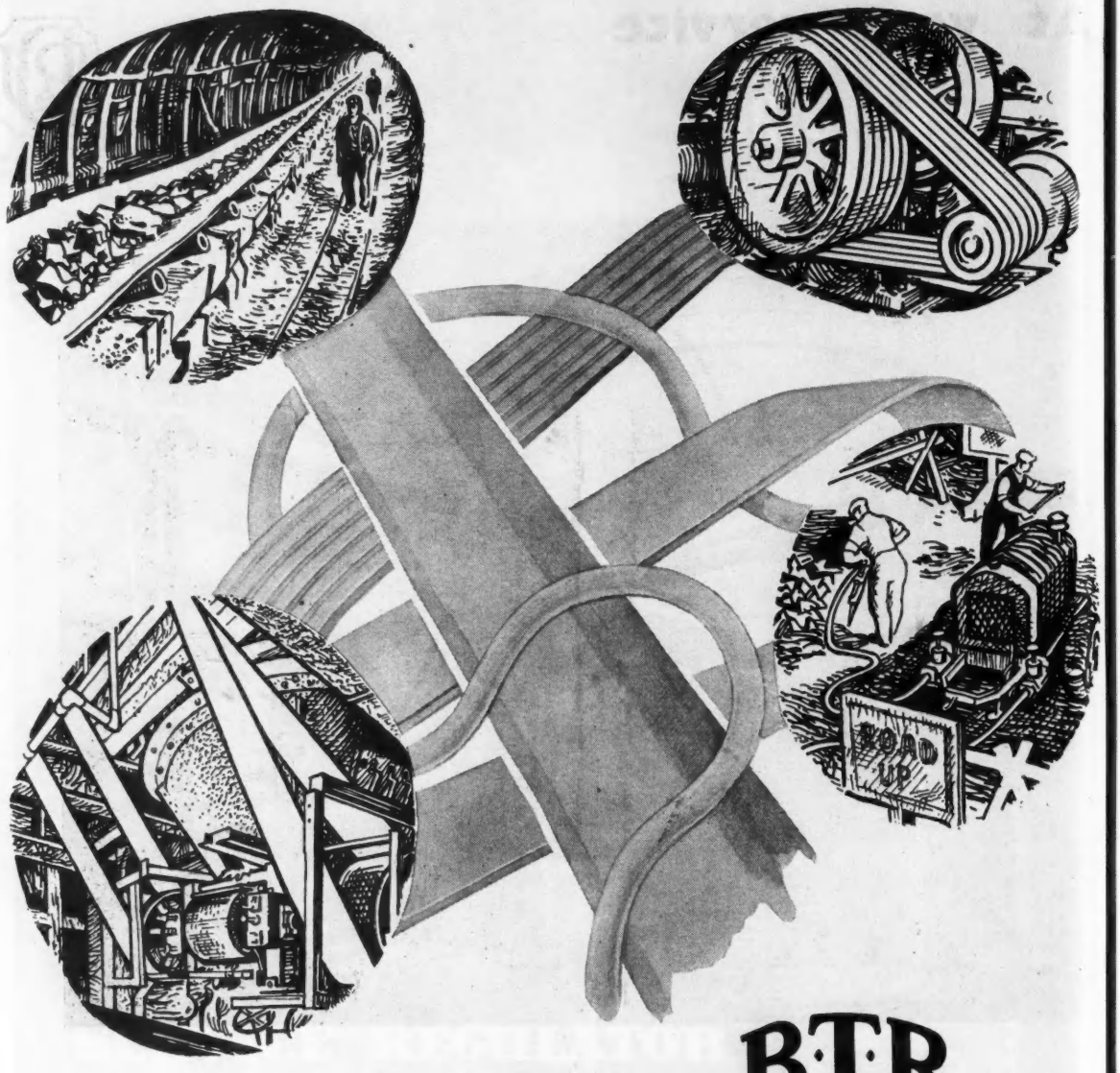

Wherever you can sense the quickening rhythm of industry, the confident beat of its gathering momentum, there you will find B.T.R. industrial rubber products contributing to the mounting effort—conveyor belts speeding their loads above and below ground; "V" and transmission belts driving the machines; hose feeding industry with fluids. Wherever you see a job particularly well done by an industrial rubber product, records of performance and economy achieved, extra long service given —you are almost sure to find the B.T.R. trade mark

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DB52

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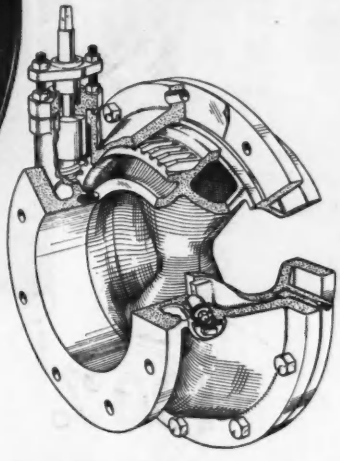
A 1952 gas valve for Medium & High Pressures AT LOW PRESSURE PRICE!



**GAS TIGHTNESS** maintained against pressure from either direction,

**ALL WORKING PARTS** sealed from the gas stream.

**MATING FACES** of the gate and seat always in contact, clean and greased.

**ADJUSTABLE WEDGES** ensure equal distribution of pressure on the gate.

**NO POCKETS** exist in the bore to accumulate foreign matter.

**STREAMLINED PORTS** with larger area than the nominal bore, offer negligible resistance to flow.

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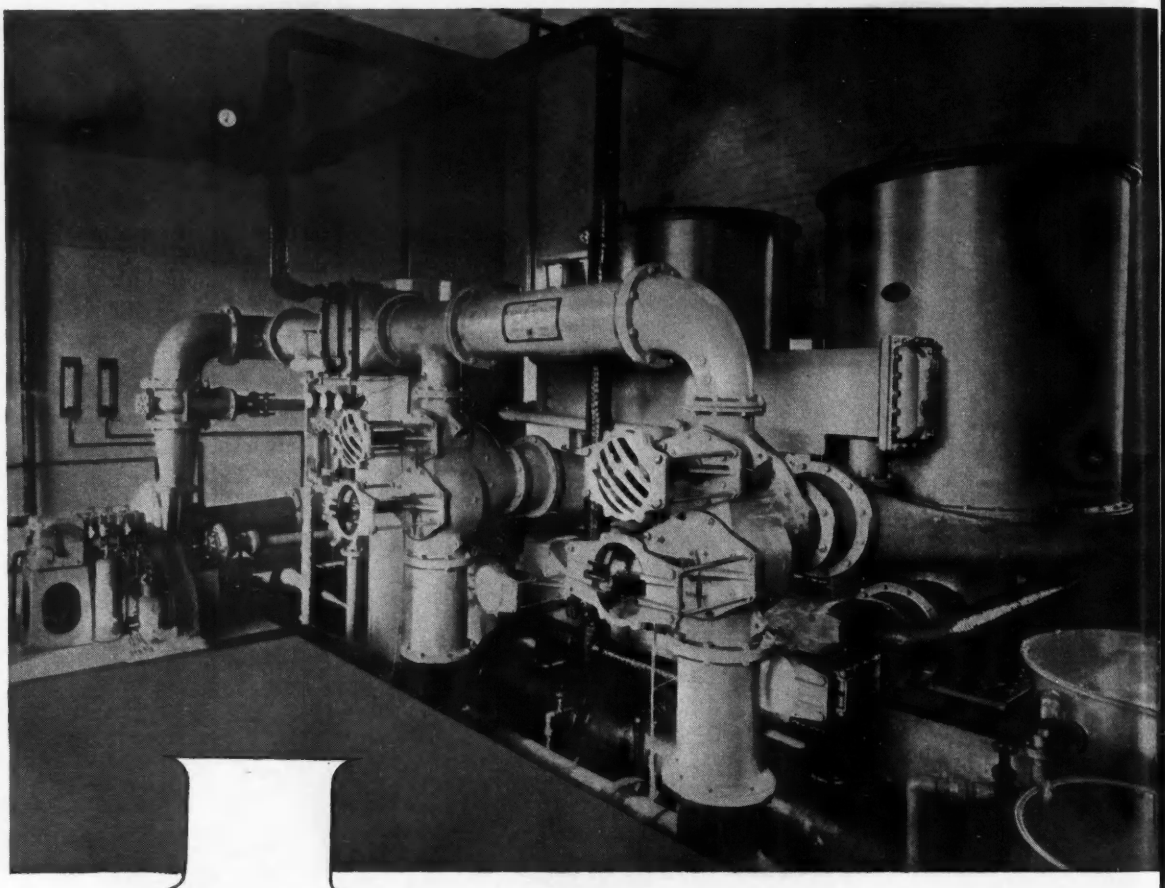

# 100% recovery of Benzole

HAS BEEN RECORDED

100% recovery of Benzole has been recorded in the Gas Industry when Sutcliffe Speakman plants of the type illustrated are already installed.

These recovery plants are the result of over twenty years experience in the manufacture and industrial use of Activ Carbon. Their capacities range from 250,000 cu. ft. per day Entirely automatic and with few moving parts, they are compact clean in operation, and economical to run. Their initial cos too, compares favourably with that of other recovery systems In every way they are the most profitable investments. We are alway ready to draw up a complete balance sheet for Benzole recover in any specific undertaking of the Gas Industry.

*to cut Benzole wastage to a minimum, consult*

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## WITH AN ACE COKE DE-BREEZING SCREEN

Standard unit incorporating weighing and bagging equipment gives 20/25 TONS clean coke weighed and bagged within the hour.

All types of MOBILE DE-BREEZERS complete with skip hoist.

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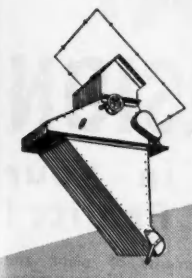
Running costs—only 5/8 OF ONE H.P.

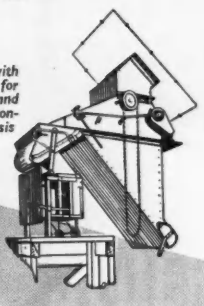
All units can be applied to EXISTING BUNKERS

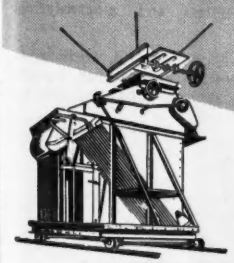
All units can be fitted with dual SACK HOIST for low coke hoppers.



*Standard unit arranged for continuous running, as used for truck or lorry loading.*

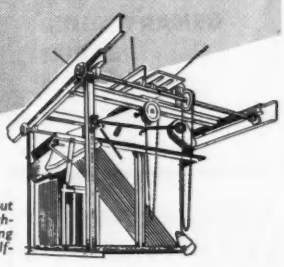
*Standard unit fitted with clutch and hand control for de-breezing, weighing and bagging coke as a self-contained unit on one chassis*





*Standard unit but incorporating weighing and bagging equipment as a self-contained unit on one chassis.*

*Standard unit but incorporating weighing and bagging equipment as a self-contained unit.*



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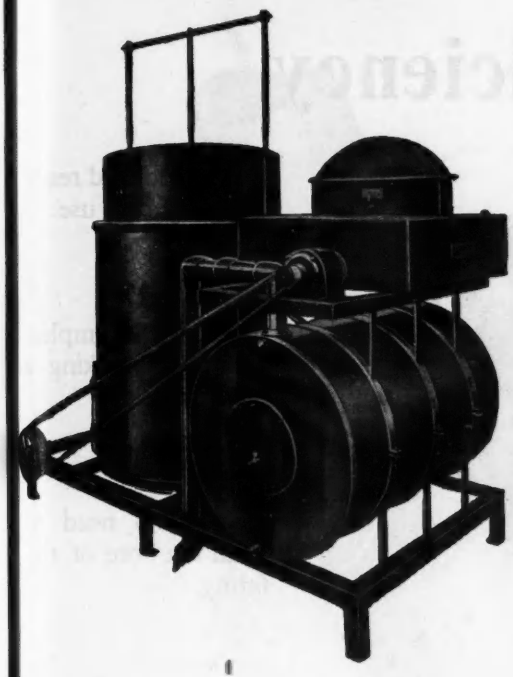

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## for speed and efficiency

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Provides the simplest method of making a capillary joint.

There's no need to clean the bore of the fitting.

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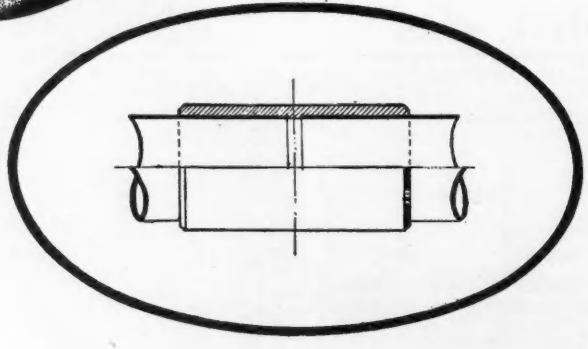

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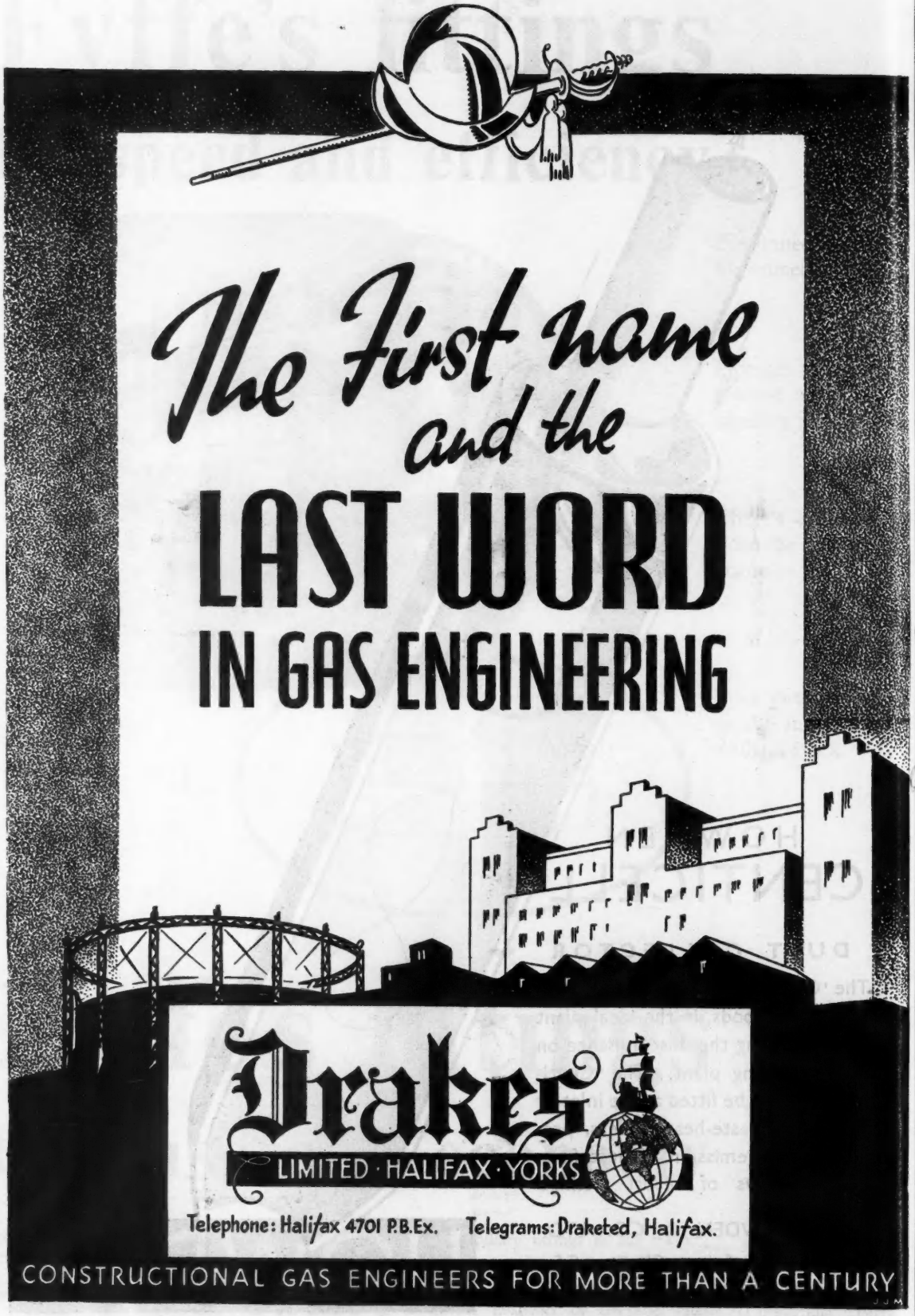
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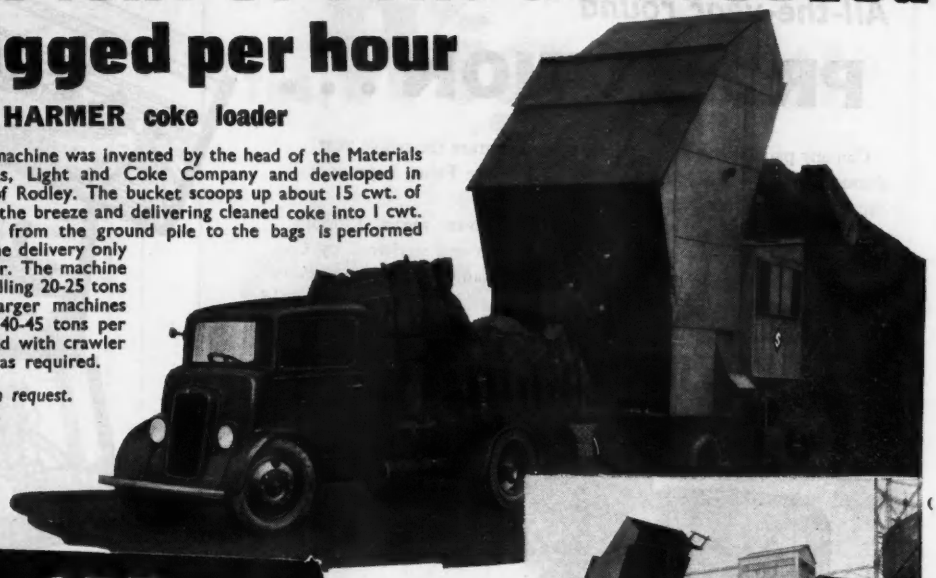
*Illustrated leaflet available on request.*



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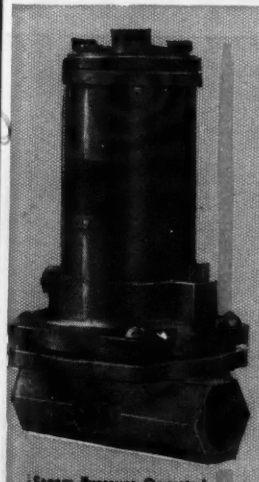
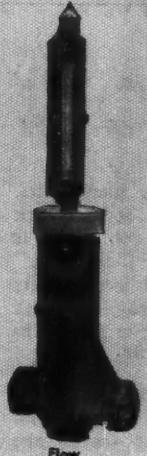


Steam Pressure Operated Gas Control Valves

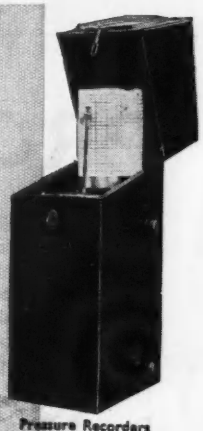
Single Column Pressure Gauge



Flow Indicators

Relay Valves

Cut-off Valves



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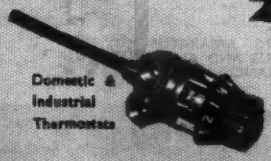

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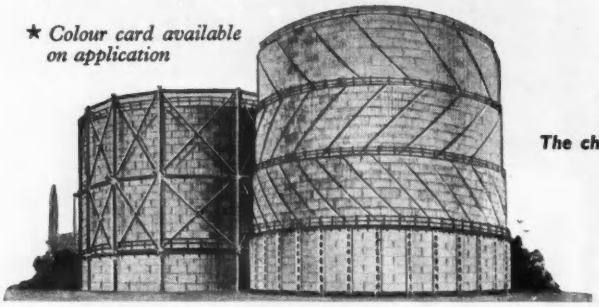
AVARC Silica-Graphite paints, made to our own special formulæ, have been accepted as standard paints for iron and steelwork by Gas Undertakings, large Industrial Corporations, Railway Companies, Power Station Authorities and public undertakings throughout the world. With AVARC Paints the Silica-Graphite base has no chemical action with the vehicle. The paint dries with a hard leathery skin which allows for expansion and contraction of the metal in all weathers.

★ *Colour card available on application*



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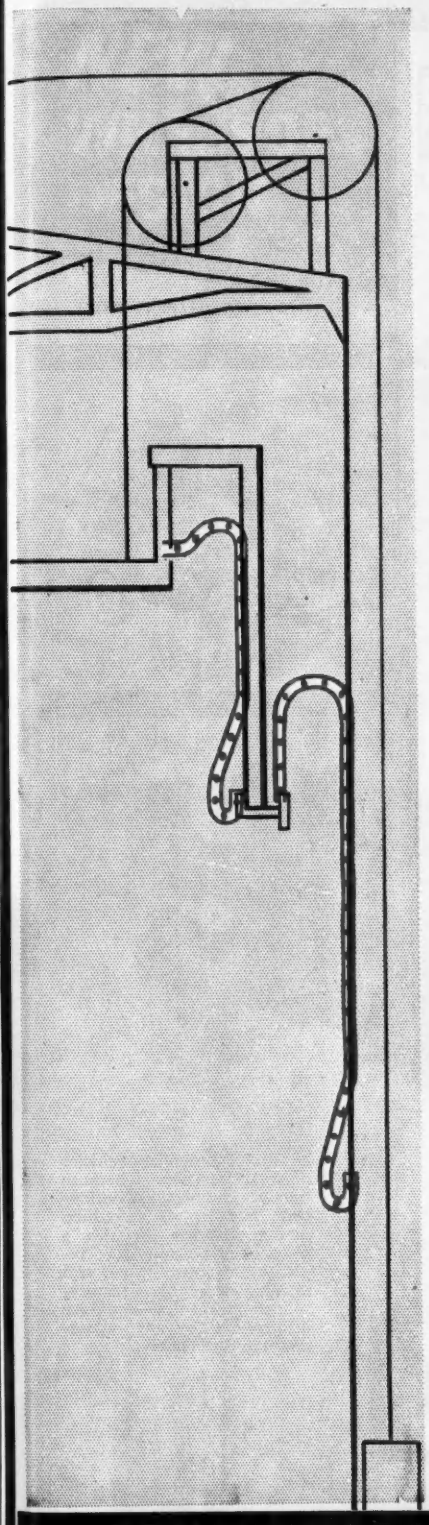

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- It needs no operating accessories
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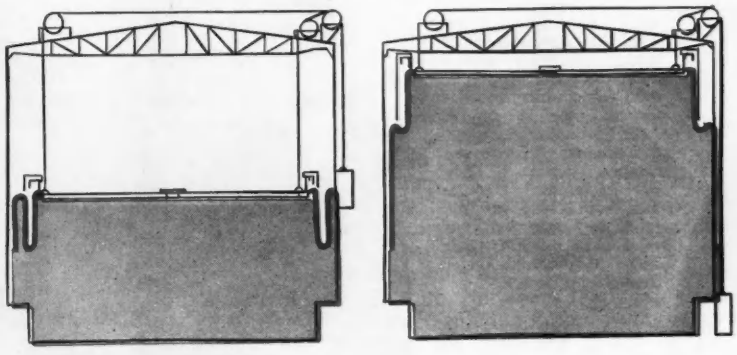
- It is the solution to maintenance problems



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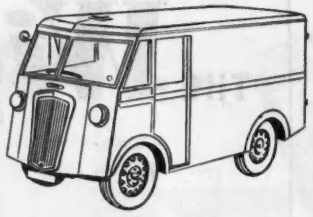
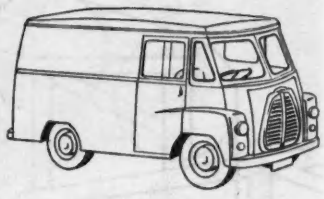
10 CWT EXPRESS DELIVERY VAN

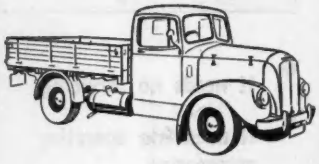


15/20 CWT VAN

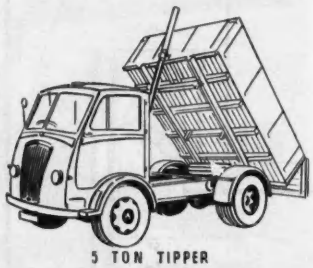


1½ TON VAN (EXPORT ONLY)

# A VEHICLE FOR EVERY JOB *– and built for the job!*



1½, 3, & 5 TON TRUCKS



5 TON TIPPER

The Morris-Commercial range not only covers most transport needs but each vehicle has been designed, after a careful study of its owner's requirements, down to the smallest detail. They have in common a stamina that stands up to the toughest conditions of work and a reliability that keeps them earning longer than most others.

5-TON TRUCK

Morris-Commercial vehicles need the least service because they get the best! A nation-wide network of accredited service stations provides a comprehensive supply of replacement units, spares and maintenance by factory-trained mechanics—a service unsurpassed by any organisation in the country.

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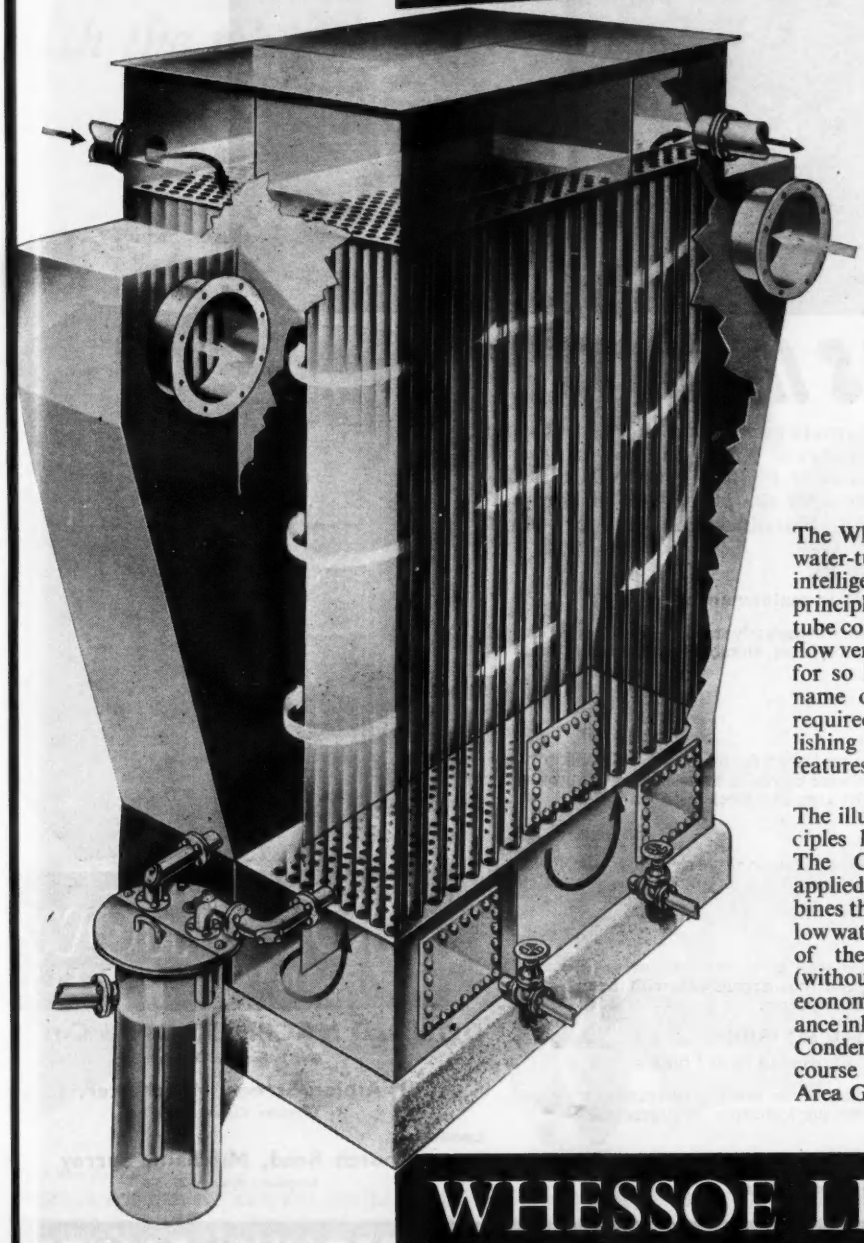
NUFFIELD PRODUCTS

NEW WHESSOE DESIGN

# The CROSS-FLOW CONDENSER



The Whessoe CROSS-FLOW vertical water-tube condenser entails the intelligent application of the design principles established for the horizontal tube condenser, to the type of parallel-flow vertical tube condenser which has for so long been associated with the name of Whessoe. Many problems required solution before finally establishing the operating principles and features of this new Whessoe unit.

The illustration shows how these principles have been carried into effect. The CROSS-FLOW principle as applied to vertical water-tubes, combines the high rate of heat transfer and low water-cooled surface, characteristic of the horizontal tube condenser (without its disadvantages) with the economy of construction and maintenance inherent in the vertical tube design. Condensers of this type are now in course of construction for several Area Gas Boards.

WHESSOE LIMITED
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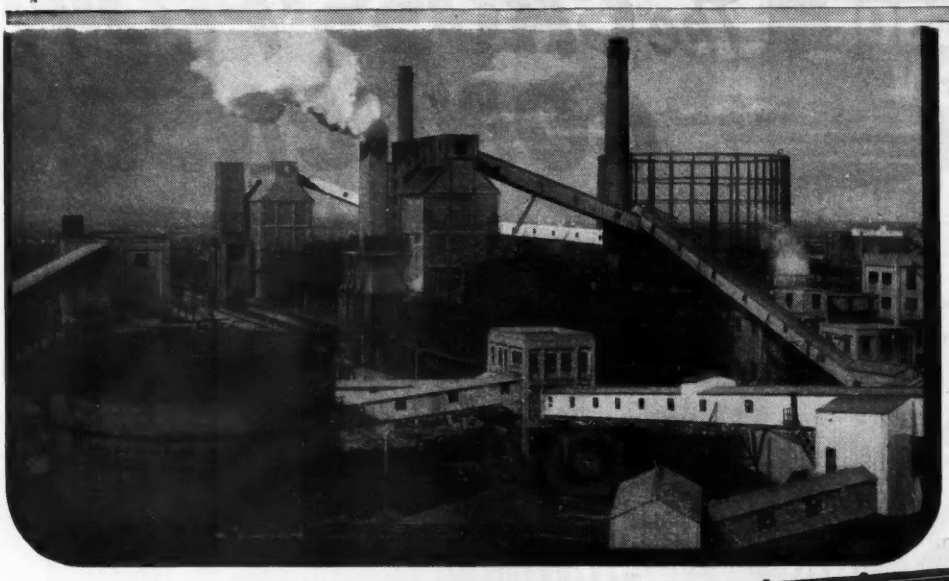
# THE SCIENCE OF SURFACE PROTECTION-



Skyline panorama of Beckton Gas Works with acknowledgments to North Thames Gas Board.

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**PERMANENT GAS WORKS GREEN**

**For Gasholders and all Gas Plant maintenance**

'Foochow' Permanent Green Paint is completely stable against Gas Works fumes, chemical and corrosive atmospheres, suitable for seaside and rural districts.

**MIKALOR GREY PAINT**

**Micaceous Iron Ore Paint**

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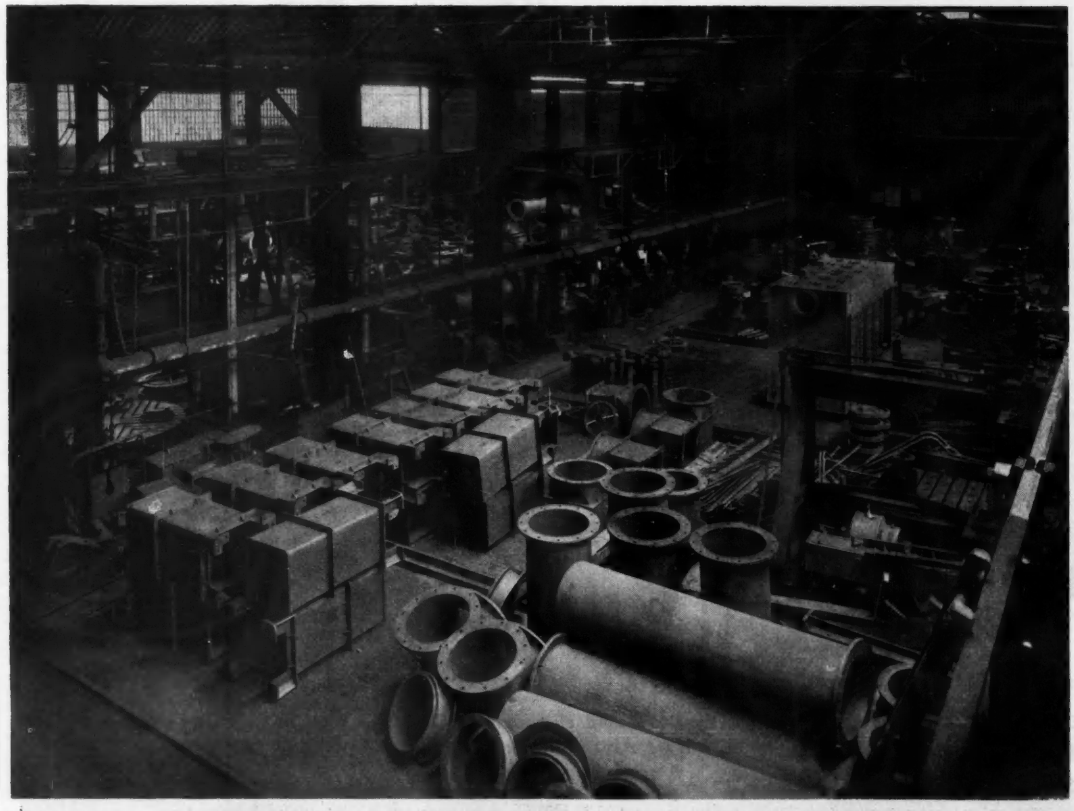

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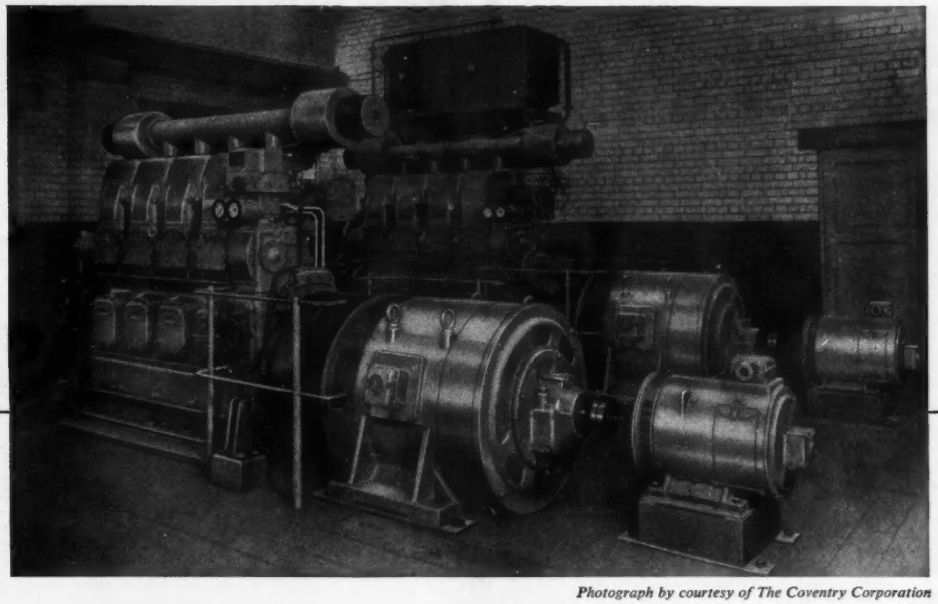

*Photograph by courtesy of The Coventry Corporation*

Two 'ENGLISH ELECTRIC' 4-cylinder, type "RKD" dual-fuel engines have been installed in the power house of the Finham Sewage Works, Coventry. The fuel used is methane gas, obtained from sewage sludge, while combustion is initiated in the cylinders of the engines by a pilot injection of fuel oil. Each engine has an output of 220 b.h.p. and is directly coupled to an 'ENGLISH ELECTRIC' 150 kW alternator, driven at 600 r.p.m. This power is used for lighting and heating the sewage works and also supplies the electrically operated sewage machinery. Waste heat is recovered from the exhaust gas and engine coolant and is utilised in the process of the sludge digestion and methane recovery.

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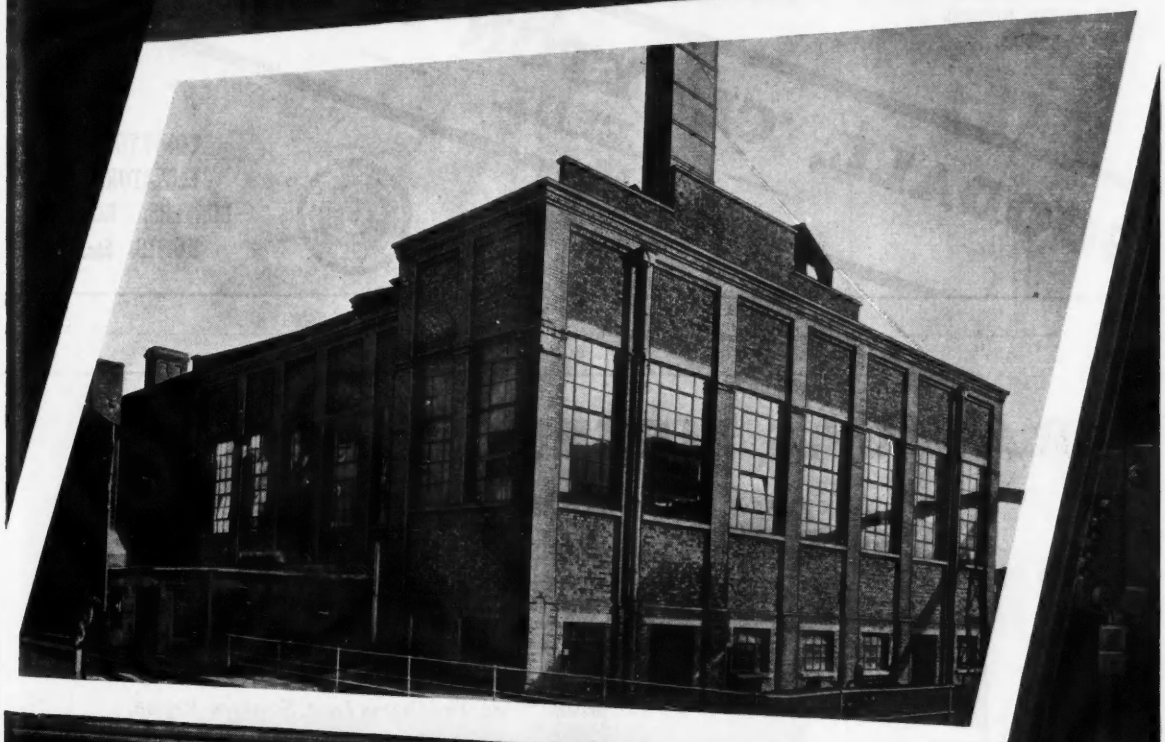

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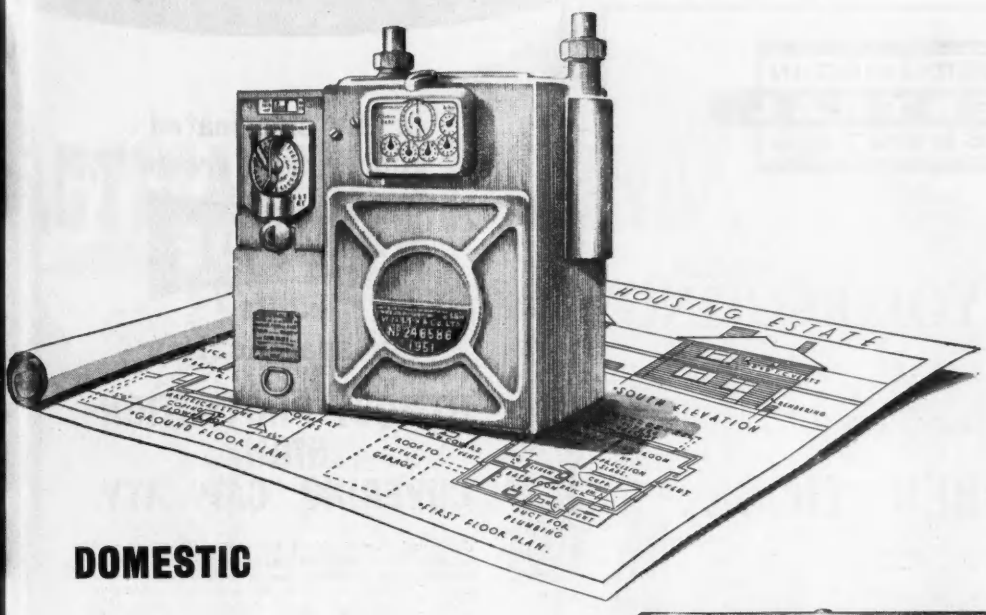


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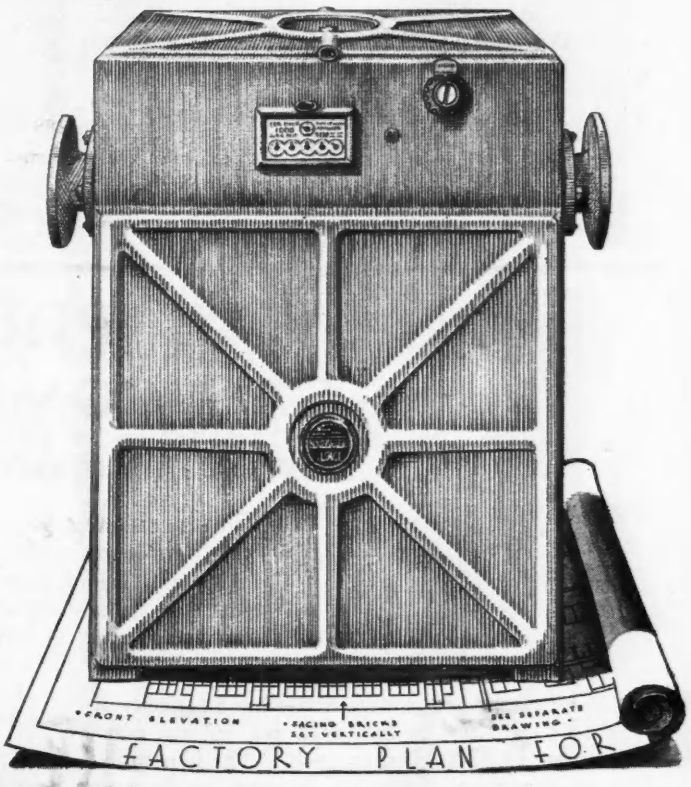


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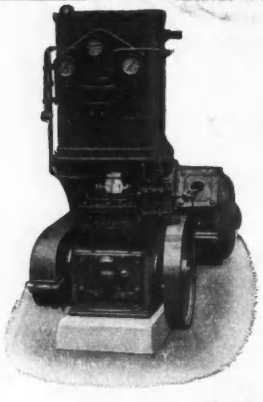

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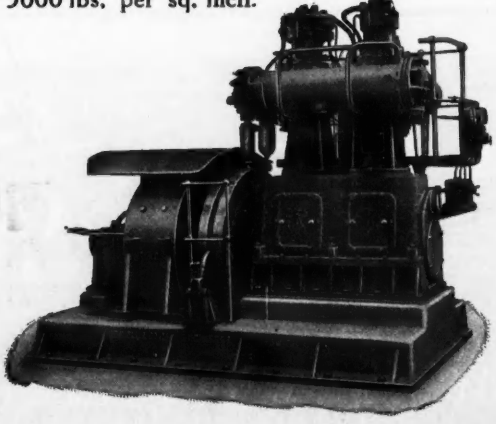

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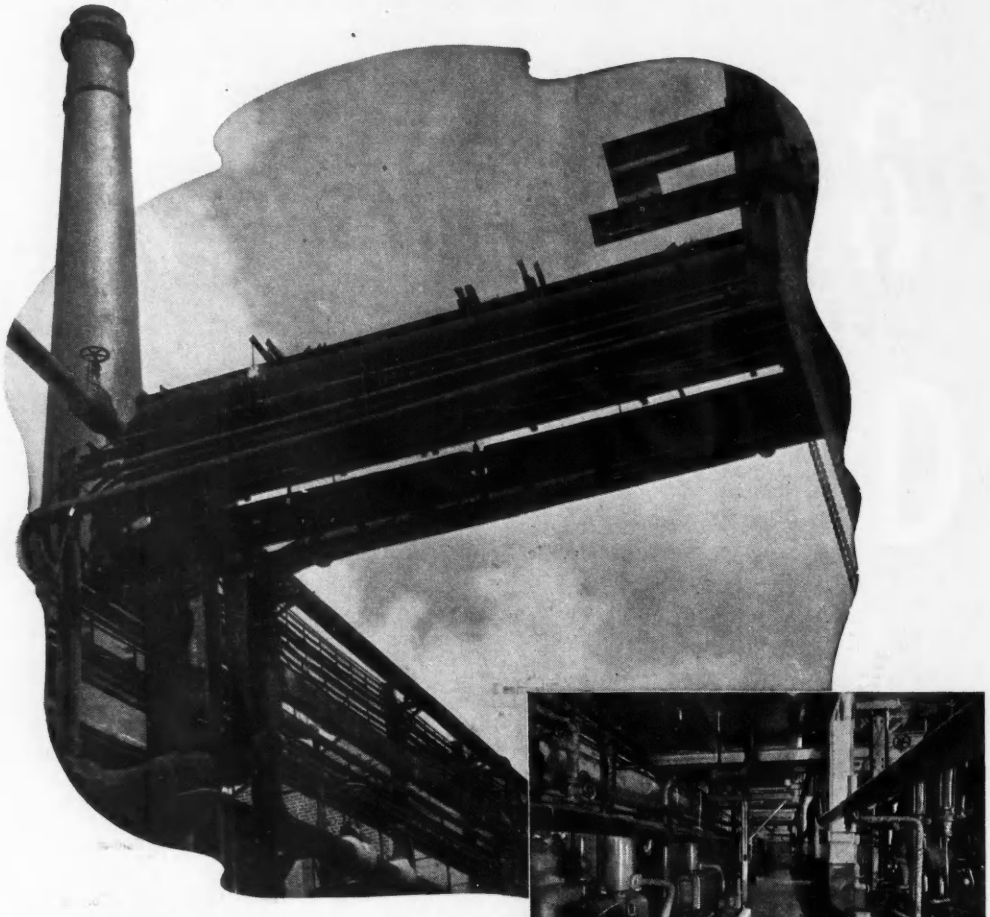

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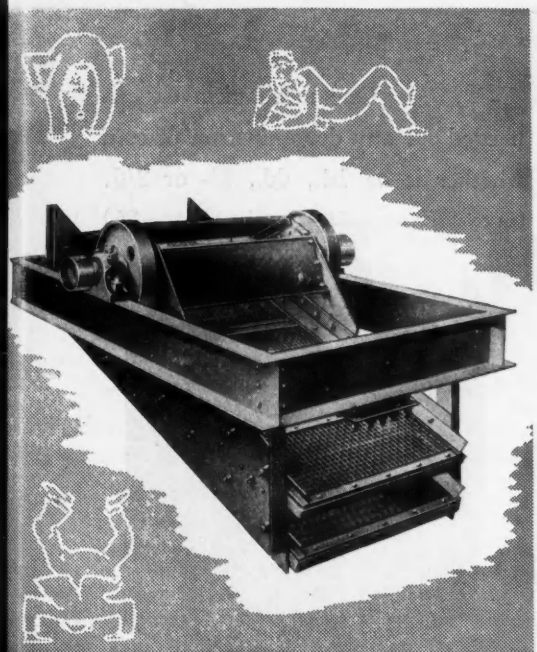

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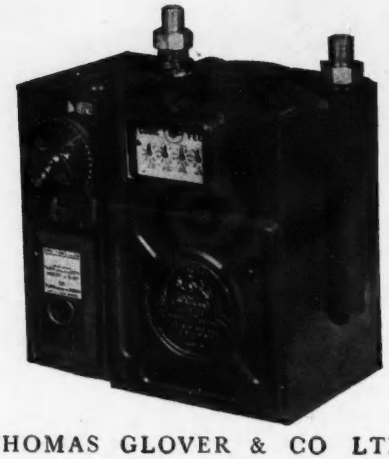

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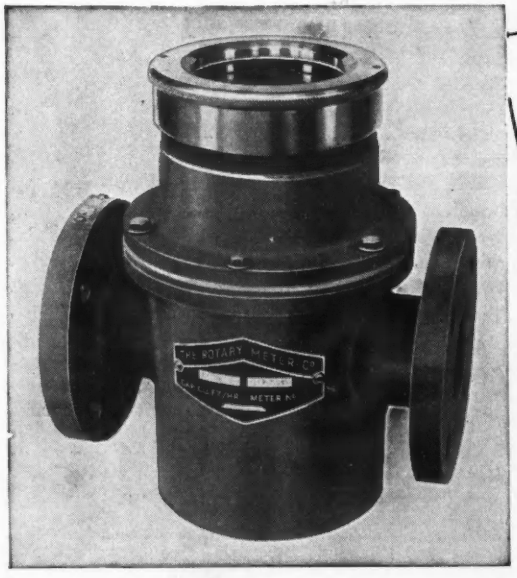

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# GAS JOURNAL

VOL. 271. No. 4659 104TH YEAR SEPTEMBER 17, 1952

## FINDINGS OF THE RIDLEY COMMITTEE

PUBLICATION last Thursday of the Report of the Committee on National Policy for the Use of Fuel and Power Resources—the Ridley Committee—followed close on the heels of a spate of special pleading in the national and technical Press on behalf, particularly, of the gas industry and the electricity industry. To those who contemplated with optimism that the Committee would recommend strongly in favour of the setting-up of an over-riding authority to co-ordinate the activities of the N.C.B., the B.E.A., and the gas industry, the report will come as something of a blow. No such over-riding authority is in fact recommended. Not that co-ordination is not desirable; the point is that the Committee is unanimous that there should be 'freedom of choice' by the consumer in his or her preference in fuel usage, for it is the consumer who pays the bill. The Committee, in effect, says quite bluntly to the gas and electricity industries that 'within a framework' they should sort out their own difficulties and settle their respective claims to be good and honest providers of thermal energy in the 'national interest'—and, again, compete for the public's money within this framework.

This aspect of the report is, of course, of paramount importance. It transcends sectional by-play and aims at fluidity amid changing circumstance. At first glance we discern a little too much fluidity about the findings of the Ridley Committee, but we welcome competition within the framework recommended by the Committee. First step to formulate such a framework is the setting-up of a specialised Tariffs Advisory Committee to assist the Minister of Fuel and Power in his general control over the price policies of the nationalised fuel and power industries. The Ridley Committee insists—and we thoroughly agree with this insistence—that the prices at which different types of fuel and power are offered must reflect the real cost of providing them. The Committee asks for research to be applied to the technical problem of measuring how much electricity is consumed at peak periods so that, presumably, the consumers of this electricity can be charged the appropriate, relatively high, price. The Tariffs Committee, it is argued in the report, should not only consider systems and principles; it could consider how far actual prices and tariffs charged by the fuel industries appropriately reflect these principles. 'It should consider and report on cases where there appeared to be a conflict in pricing between the attitude (or interests) of a particular board and the wider national interest.' Reports of the Tariffs Committee, it is strongly recommended, should be made public. The Minister of Fuel and Power may need new legal powers to give effect to the findings of the Tariffs Advisory Committee. This is one method of approach to the problem of equity of charge and consequentially, in some measure, to the right use of coal. All the same, it hardly takes into account that every two tons of coal processed at a gasworks yields a ton of coke for sale—that heating by gas requires roughly half the coal needed for heating by electricity.

The second point we would mention at the moment is the proposed setting-up of a Joint Planning Board. The Ridley Committee, though it rejects the idea of a planning body with large powers over the fuel industries, is not satisfied that the present arrangements for co-operation on production and distribution problems between the fuel and power industries are adequate. On later pages we epitomise the findings of the Committee in this respect and abstract the report, with its many recommendations, included among which are more Government loans to industry for installation of fuel saving equipment on more attractive terms and the production of a 'utility' grate for domestic use, with financial incentives for users. The Committee was equally divided on the proposal that the coal price should be raised immediately by £1 a ton. The implications of the report are, of course, far-reaching, and this note is merely a cursory glance. We shall return to more detailed, more critical, comment in our issue next week.

# National Fuel Policy

## Recommendations of the Ridley Committee

**The Report of the Committee on National Policy for the Use of Fuel and Power Resources — the Ridley Committee — was issued on September 11. The Committee was appointed in July, 1951, by the Minister of Fuel and Power to consider possible measures for improving the country's fuel and power use, following a joint appeal to the Government by the Federation of British Industries and the Trade Union Congress.**

THE terms of reference of the Committee were:—'In view of the growing demands for all forms of fuel and power arising from full employment and the rearmament programme, to consider whether any further steps can be taken to promote the best use of our fuel and power resources, having regard to present and prospective requirements and in the light of technical developments.'

The Chairman of the Committee, Viscount Ridley, C.B.E., was a member of former Fuel and Power Advisory Council (the Simon Committee) which in 1946 reported on domestic fuel policy.

The other members of the Committee were:—

| | |
|---|---|
| Mr. Lincoln Evans, C.B.E. | General Secretary of the Iron and Steel Trades' Confederation. |
| Mr. N. W. Gardiner .. | Technical Director of Huntley and Palmers, Ltd. |
| Sir Claude Gibb, C.B.E., F.R.S. .. .. .. | Chairman and Managing Director of C. A. Parsons and Co., Ltd. |
| Professor W. R. Hawthorne .. .. .. | Professor of Applied Thermo-dynamics at Cambridge University. |
| Professor W. A. Lewis .. | Professor of Political Economy at Manchester University. |
| Mrs. M. McIntosh .. | Tutor in Sociology at Bedford College, University of London; Member of the London County Council. |
| Miss M. R. Schofield .. | Housing Manager of Stoke Newington Borough Council. |

The Committee had evidence from more than 60 organisations and individuals, received over 200 memoranda, and met 40 times in the course of a year's working, often throughout the week-end. The report runs to 242 pages and constitutes a comprehensive digest of the fuel situation. We publish here abstracts from the report including the chief recommendations which have especial bearing on the gas industry.

### The Problems of Fuel and Power Policy

The terms of reference, states the Committee, at once raised the question, what was to be understood by 'promoting the best use.' It has assumed that the general aims of a national policy to promote the best use of fuel and power should be:—

(i) To meet in full the demands of the community for the different fuel and power services, when those services are sold at prices which closely correspond to the relevant costs of production and distribution.

(ii) To provide for export fuels on such a scale and of such types as can be sold abroad with most gain for the country.

(iii) To promote the maximum economic efficiency in each use of each fuel.

(iv) To encourage the use for particular services of the fuel which gives the best returns on the resources consumed.

The first two of these aims raise questions of pricing policy—what are the 'relevant costs,' and what should be charged for coal exports or for coke and other coal by-products sold abroad? The other two aims depend on comparisons of the price of the fuel consumed with the costs of saving fuel and with the value of the service to the consumer. The Committee has therefore throughout the report stressed the importance of price policy.

The aims set out in the first paragraph must underlie the central Government's fuel policy at all times. At present, however, supplies of fuel and power are less than consumers would like to buy at prevailing prices. More coal could be sold both at home and abroad if more were mined. Gasworks in some areas are unable to meet all demands. Electricity plant is insufficient to meet demands at some peak periods. Neither coal supplies nor gas and electricity plant capacity can be quickly increased, and in these conditions the first object of fuel and power policy must be to divide what is available between different claimants so as to make the best use of it. This immediate problem may require measures which are in conflict with the general aims of policy for the long run.

In both immediate and long run aspects, fuel and power policy is faced with a series of intricate problems. The best use of fuel and power is determined by the value of the resources consumed to provide the supply, the social costs to the community of producing or using it, and the value to the individual consumer of the specific fuel and power service. The resources used include not only the primary fuel but also the labour and plant needed to provide the fuel and power service when, where, and in the form the consumer wants it. The social costs, such as smoke pollution, are those borne by the community as a whole rather than by the individual supplier or consumer. The value of any service to the consumer varies with the particular characteristics and nature of that consumer's demand. These factors, all relevant in determining the best use of fuel and power, change with time. Any effective fuel and power policy must therefore match problems which are both intricate and variable.

### Fuel Supply Prospects

On the evidence given to the Committee, fuel prospects are these:—

(i) In the next few years, it is likely that the country will continue to face a shortage of coal, electricity generating capacity at peak hours, and (in some areas) gas-making capacity; it will be difficult greatly to accelerate the increase in supplies of oil fuels.

(ii) In the longer run, although oil supplies will con-

tinue to be uncertain, the use of oil fuels in this country may be expected to double within the next decade.

(iii) No great relief to fuel shortages can be expected within the next decade from sources other than coal and oil. But, in view of the continued seriousness of the coal supply position, every effort will have to be made to accelerate development and research into new sources of energy.

(iv) The National Coal Board may be able to meet in full the demand for coal 10 years hence. But output is bound to remain uncertain, and large increases above the present planned level would mean steeply rising costs.

(v) How far shortage of gas-making and electricity generating capacity will continue in future years must depend mainly on the extent to which investment resources can be found to build new plant but the size of the gap may also be affected by the price policies applied.

For the next few years the Committee expects a continued shortage of fuel and power in this country. Thereafter, on the estimates made, supplies should be easier, although it appears to the Committee that to be able to meet prospective demands over the next decade in full the National Coal Board may have to accelerate and expand their plans for future output. But the estimates are subject to many qualifications: supply may well be less than assumed and demand much higher, and small changes in either can provoke a fuel crisis. Certainly fuel supplies in the next decade will not be as plentiful in relation to demand or as cheap in terms of other commodities as they were before the war.

It is concluded that measures to improve the efficiency of fuel use in the next few years are essential if the fuel needs of the country are to be satisfied, and in the longer run will always be important as a means to economise the country's resources.

The Committee foresees a demand for the country's coal at home and abroad of about 260 mill. tons a year, against the N.C.B.'s long-term production plan, related to an estimated demand of 230-250 mill. tons a year.

## The Price of Coal

The question is discussed whether the price of coal should be raised to stimulate economy in use, perhaps by imposing an excise duty of £1 a ton.

The Committee differs on the theory of average and marginal cost pricing. It also differs about how much an increase in the price of coal would stimulate greater fuel efficiency. Those who oppose an increase in price think that in many industries coal costs form such a small proportion of total costs that even an increase of £1 in coal prices would not have any significant effect on fuel efficiency; and that in many industries where coal costs are a large proportion of total costs (as in iron and steel production) the present level of coal prices is already high enough to give a strong incentive to fuel efficiency and where in such cases efficiency is not achieved, other means apart from increasing the price of coal must be sought. For domestic consumption they believe that since, as the whole Committee agrees, house coal rationing must continue for some time, a duty of £1 a ton would give little stimulus to economy.

Those who favour a coal price increase think that a sharp increase in the price of coal will give a salutary shock to all coal consumers and compel their attention to fuel economy. In industry, under conditions of increasing competition, even relatively small additions to total costs will affect the firm's attitude towards fuel economy; firms whose fuel costs form a large proportion of their total costs will be forced to re-assess the economic gains from fuel saving against the cost of making that saving. Part of the proceeds of the coal excise duty could be used to subsidise fuel efficiency measures for industry. For domestic consumption they believe that the increase in gas and electricity prices due to the increased price of coal will have the desirable effect of emphasising the coal costs in these commodities. They further believe that the duty of £1 a ton will accelerate improvement in domestic fuel efficiency and enable rationing to be dispensed with at an earlier date. This half of the Committee accordingly think that an increase in the price of coal of £1 a ton would bring a substantial reduction in demand and accelerate the improvement of fuel efficiency.

Professor Hawthorne, Professor Lewis, Mrs. McIntosh, and Miss Schofield recommend an excise duty of £1 a ton on coal; Lord Ridley, Mr. Lincoln Evans, Mr. Gardiner, and Sir Claude Gibb reject this recommendation.

## Domestic Use of Fuel and Power

Turning to the domestic field, the conclusions drawn by the Committee from estimates of coal costs are that:—

(i) For 'continuous' room heating, solid fuel burnt in modern types of appliance uses coal more efficiently than does gas or electricity;

(ii) the margin of efficiency is greater when the solid fuel appliance also provides water heating service;

(iii) for shorter periods of room heating gas or electricity may use less coal than solid fuel;

(iv) the use of electricity for room heating is inferior to gas in coal ecenomy *at power station peak hours;* but at off-peak hours there is little to choose between gas and electricity unless gas convector fires or flueless heaters are used, when gas has some advantage over electricity in coal economy; this advantage is greater with the flueless heater but electric fires can be used in conditions where flueless gas fires would be unsuitable;

(v) of the solid fuel burning fires, the closed stove is the most efficient for 'continuous' heating; improved grates burning coal are markedly better than the old fashioned grates only when fitted with restricted throats and designed to provide convected as well as radiant heat;

(vi) the old-fashioned grates are not so inefficient as is commonly thought, though in normal conditions they are the least efficient solid fuel appliance;

(vii) in modern improved room-heating appliances coke is more efficient than coal;

(viii) central heating is a highly efficient means of warming a complete house but is not a substitute for other methods of heating where it is desired to heat one room only;

(ix) broadly speaking, at present, for either cooking or water heating, gas uses less coal than electricity, but this advantage will be reduced as new plant comes into operation;

(x) for either cooking or for *summer* water heating both gas and electricity normally use less coal than solid fuel appliances do.

Sixteen recommendations are put forward in this section of the report dealing with the domestic use of fuel and power. They are as follows:—

(1) A Tariffs Advisory Committee (recommendations regarding which will be dealt with later) should consider at an early date whether the present

domestic electricity tariffs charge the larger consumers a price closely corresponding to the cost of supply.

(2) New standards of performance based on achieving a room efficiency of the order of 40% with coal should be determined for solid fuel room heating appliances.

(3) Appliances satisfying the new standards should be clearly marked to show the potential purchaser their efficiencies under official test.

(4) A 100% purchase tax should be applied to solid fuel room heating appliances (and spare parts for such appliances) which do not achieve these new standards.

(5) The production of more low-temperature coke should be encouraged.

(6) The production of high-efficiency open fires of 'utility' pattern capable of easy installation in existing fire openings, and with convection heating and a restricted throat, should be encouraged.

(7) The production of simple devices for insertion in existing flues to restrict the chimney throat should be encouraged.

(8) The production and sale, in convenient retail quantities, of insulation materials for domestic premises should be encouraged.

(9) Financial incentives should be provided for the installation of fires of the new standards and for improved insulation of houses.

(10) Subsidies for new house building and the granting of house building licences should be made conditional on the provision of a prescribed standard of insulation and on the installation of solid fuel appliances of the new standards.

(11) The Government should launch a powerful publicity campaign in support of appliances of the new standards and improved house insulation.

(12) A new and more informative list of efficient domestic solid fuel appliances should be published.

(13) A well illustrated brochure on domestic house insulation should be prepared and widely distributed.

(14) Urgent attention should be given to the development and application of a cheap but reasonably accurate means of metering hot water supplied from central heating or central hot water systems in flats.

(15) The National Coal Board should negotiate with the miners new agreements to exchange reduced concessionary coal for an adequate cash compensation.

(16) The purchase tax on fluorescent lighting tubes should be removed.

## Non-domestic Use of Fuel and Power

The following recommendations are among those made in respect of the non-domestic use of fuel and power:—

(i) There should be a great increase in the service for providing industry with advice on fuel efficiency.

(ii) More attention should be paid to the need for training in fuel technology and financial aid should be provided for that purpose.

(iii) The Ministry should invite industry to set up an organisation to provide a greatly increased fuel efficiency advisory service for industry.

(iv) The Ministry's Fuel Efficiency Service should be retained in its present form.

(v) The present scheme for Government loans for approved fuel installations should be amplified on more attractive terms.

(vi) The extension of industrial shift working should be considered.

(vii) Stokers should be encouraged to raise their efficiency by arrangements for improving their status.

(viii) Steps should be taken to assure adequate steel supplies for the production of fuel efficiency equipment.

(ix) Heating methods and installations in new industrial and commercial buildings should be subject to planning control.

(x) Government Departments and other public authorities should take the lead in promoting fuel efficiency.

(xi) Investigation of methods for the total gasification of coal should be encouraged.

## Fuel and Power Co-ordination

Much of the evidence the Committee has received makes the assumption that very great improvements in the use of the country's fuel and power resources can be made through co-ordination measures. On this assumption it has been urged that some new central authority should be established to control the investment policies of the several fuel and power industries, and co-ordinate their activities in the broader national interest.

The Committee does not accept the view that control over investment plans should be vested in a new authority; where any control is necessary it seems clear that this function should be exercised by the Minister of Fuel and Power, responsible to Parliament.

Before considering whether a new authority is required to co-ordinate the activities of the fuel and power industries, the Committee discusses what purposes co-ordination should serve. In the Committee's view they are:—

(1) Promoting the *use* by the ultimate consumers for specific purposes of the fuels best suited for those purposes.

(2) Ensuring sufficient co-operation between different fuel industries in *production and distribution*, including new developments.

## Co-ordination of Use

It has frequently been asserted, by comparing the amount of coal used at power stations and gasworks, or the cost of the plant required to provide similar services by gas or electricity, that lighting and power services form the proper fields for electricity use, but that gas is more economical for heating services. The conclusion is drawn that the Government should intervene directly to sponsor electricity for light and power, and gas for heating, as a means to making the best use of fuel and power resources.

This type of proposal, however, raises the following difficulties:—

(*a*) The relative advantages of the two fuel services cannot be positively and generally established even for specific purposes. At present gas appears to make better use than electricity does of the heat in coal for many domestic heating services. But even in this limited field, marked disagreement between the fuel industries themselves on the relevant facts is apparent in the memoranda of evidence which have been submitted. When a wider range of use is considered and account is taken of the variations in consumers' desires, needs, and habits no general comparison, even based solely on relative coal costs, appears to be valid.

(*b*) Many commentators have appeared to think that relative coal costs alone give sufficient guidance for the selection of fuel services. But coal is only one of several costs in fuel and power supply; there are, for instance, the capital and labour costs of conveying the coal to the consumer or of converting it into gas and electricity. The Committee has attempted various comparisons to cover all these 'real costs' for domestic fuel services, but does not think it possible to establish how they compare for all the different fuel and power services in their diverse conditions of use. The only positive conclusion is that *for peak hour use* electricity is relatively costly in coal and capital—but lighting is the only service whose contribution to peak-hour use can be clearly identified.

(*c*) In any consideration of alternative patterns of fuel use, the consumer's liking for one service rather than another is relevant—the aim of all production is to provide what people want. The 'utility' of different fuel and power services to an individual consumer may bear quite a different relation from that between their costs of supply; it might do more harm than good to compel the consumer to use those services which had the lower costs of supply, because he might prefer (and be ready to pay for) the more costly service as better meeting his needs. 'Freedom of choice' may be very important as a means of giving the individual consumer what he wants.

(*d*) Any attempt to determine by central authority the pattern of the consumers' fuel use would meet formidable problems of enforcement, both because of administrative difficulties and on grounds of equity.

These considerations have led the Committee to think that intervention by the central Government through administrative orders to improve the pattern of fuel use would be ineffective. Moreover, any such intervention would unduly restrict that competition between the fuel and power industries which has in the past provided an effective stimulus to enterprise and efficiency.

## Consumers' Choice

Rationing of house coal, introduced in war conditions and still maintained in this country, constitutes in effect a measure of direct Government intervention in the pattern of domestic fuel use, since it has in some measure caused people to use gas or electricity in circumstances where they would have used house coal had they been allowed to buy more. It is accepted that house coal rationing is necessary in present conditions of supply shortage, but the Committee looks forward to its ending as soon as possible, and would strongly advise against any extended direct administrative regulation of the pattern of fuel and power use.

In the Committee's view the right policy, and indeed the only practicable one, is to leave the pattern of fuel use to be determined by the consumers' own choice between competing services. Even apart from the effect of house coal rationing the individual consumer's 'freedom of choice' may often be limited. His house may not be connected or equipped for one or other of the alternative services, and it may not be easy for him to make a change. This, however, is no reason for restricting his choice still further, nor does it invalidate the thesis that consumers' choice is the right guide to the pattern of use. But to provide a setting in which 'freedom of choice' can produce an economic pattern of fuel use, it is, in the Committee's view, essential that competition should operate under the following conditions:

(1) All the prices and tariffs for fuel and power should correspond closely to the relevant costs of the particular services provided.

(2) The fuel industries should not impose on consumers any conditions of supply (including the terms on which connections to new consumers are provided) which may restrict their 'freedom of choice,' and are not justified by supply costs.

(3) Full and objective information on fuel services and fuel appliances should be made readily available to the public.

It is suggested that the British Electricity Authority and the gas boards might jointly plan and operate gas-making and electricity generating plants.

It is also put forward that the costs of meter reading and collection might be lowered if electricity and gas boards arranged for joint operation.

A further point is that the British Electricity Authority and the gas boards might arrange with the oil companies for the use at gasworks and power stations of oil refinery by-products now wasted or inadequately used. Again, the N.C.B., the B.E.A., and gas boards might jointly build and work plants for processing certain low-quality coal deposits into electricity, gas, liquid fuels, and chemicals.

## The Question of Tariffs

The production of gas is still mainly localised and the cost of coal delivered to gasworks varies with the freight costs. On the principle that charges should closely correspond to costs, the Committee considers that these differences in costs should be reflected in the prices charged by each local gas undertaking, and it cannot support the demands that have from time to time been made that the price of gas should be uniform throughout a gas board's area. These proposals have a superficial attraction of equity, but in fact they are both uneconomic and inequitable as applied to the areas of most gas boards because the costs of supply in fact differ markedly in different parts of the areas.

In the past electricity supply undertakings have made two types of arrangement for standby supplies to industrialists who possessed their own plant. Where the private plant was the main source of power to the factory, the electricity undertaking sometimes offered a 'standby' supply at a price bearing little relation to the actual amount of electricity supplied, but avowedly based on the costs of providing generating plant to meet the possible demand. Where the main supply was taken from the electricity undertaking, restrictions on the period during which the private plant could be run were imposed. The electricity boards have temporarily suspended many of these restrictive conditions embodied in old contracts, but the Committee thinks that they should now publicly and permanently abandon such conditions, and should announce the principles under which they will in the future fix prices for standby supplies.

When charges are made for connecting gas or electricity to new consumers, they do not always seem to bear any direct relation to the costs of these connections. To connect a new consumer or group of consumers requires expenditure on a service pipe or cable from the street mains to the premises and may also require new street mains or other distribution equipment. It is also necessary to wire the house for electricity or 'carcass' it for gas. To meet all or part of this expenditure, the boards usually levy a connection charge upon the house owner, and sometimes the levy is varied inversely with the revenue they expect to obtain from the consumer to be connected. This prospective revenue is measured by the provision made for services in the houses, so that the lowest connection charge will be made where least provision is made for an alternative service. Since electricity must be installed for lighting, radio, and small domestic apparatus, this type of connection charge will tend to restrict provision for the use of gas, and even to exclude it completely from the new houses.

It is clear that the main reason for the boards adopting these practices is that they set against their capital charges a fixed fraction of the revenue received per therm or unit, so that the higher the annual consumption the greater the contribution the consumer makes to capital costs. On these grounds the boards justify reducing the capital contribution demanded for new connections when they foresee a large annual consumption. This illustrates the dangers that can arise from a tariff structure not closely related to costs of supply, for there is no doubt that the connection charges levied in many cases have not given the consumer the same freedom of choice that he would have had if the charges had been based on costs.

The Committee thinks that the right practice would be to include the annual charge due to connection costs for typical cases in the fixed part of a two-part tariff applicable to domestic consumers generally. Where costs were greatly in excess of the typical case they should be charged to the house owner without relation to prospective consumption.

## Arrangements for Co-ordination of Use

The proper relationship between the fuel and power services will best be achieved by maintaining competition within an appropriate framework. The Committee has, however, heard evidence that competition between gas and electricity has sometimes been carried to uneconomic lengths and it thinks there is substance in these charges. On the other hand, it sees real value in the zeal which the boards and their staffs display for their own product, and in their belief in the benefits which it can confer on the community. In the Committee's view, once an appropriate framework has been provided, competition between the nationalised industries will be in the country's interest.

As part of the framework, an objective information service should be provided. Even greater importance is attached to providing some means to promote improved price structures for the nationalised fuel and power industries. The Committee does not wish to see materially impaired in any way the present high degree of managerial autonomy enjoyed by the boards; but the determination of price structures should not be left entirely to the nationalised industries themselves. It is no reflection on the quality of their enterprise or on the public spirit of their management to suggest that prices and tariffs fixed by them individually may not be such as to take full account of the widest national interests in economic fuel use. It has been suggested that the area consultative councils provided under the Gas and Electricity Acts, and the national consumers' councils established under the Coal Act constitute adequate machinery for promoting co-ordination of use in the sense favoured by the Committee. But these councils were set up specifically to serve as a link between the boards and their consumers, not to consider the wider national interests. That function belongs, in the first place, to the Minister of Fuel and Power.

## Tariffs Advisory Committee

The Committee sees a strong case for the establishment of a specialised body to study existing and alternative pricing methods and advise the Minister on the price and tariff policies of the nationalised fuel industries. It is recommended that the Minister should set up a small Tariffs Advisory Committee of, say, five to seven independent members of suitable experience, who would report to him either in response to his request for advice, or on their own initiative, and whom he would invariably consult before approving major changes in tariff policies. This Tariffs Advisory Committee should not only consider systems and principles; it could if need be consider how far actual prices and tariffs charged by the fuel industries appropriately reflect these principles. It should consider and report on cases where there appeared to be a conflict in pricing between the attitude (or interests) of a particular board, and the wider national interest. For some purposes this Committee would need to work in consultation with the Joint Fuel and Power Planning Board proposed later.

Reports by this Committee should be made public, since it is a matter of very great importance that public opinion should be well-informed on fuel and power pricing problems, and be able to see that the price structures are so determined as to promote the best use of fuel and power. Full annual reports on its activities should also be published. It is for the Government to consider whether the Minister needs to have new legal powers to enable him to give any board a specific direction on a matter arising from a report of the Tariffs Advisory Committee.

## Tariff Recommendations

Here in summary are the Ridley Committee's recommendations in this regard:—

(1) Electricity tariffs should discriminate in charges between peak and off-peak use.

(2) Immediate steps should be taken to make extensive practical trials of the various methods of measuring or controlling the consumption of electricity at system peak hours.

(3) The maximum demand tariff should normally be on a monthly basis.

(4) The tariffs for standby and similar supplies of electricity should directly reflect the costs of administration involved and of connecting and supplying the consumer.

(5) The prices charged by gas boards should reflect local differences in costs of supply.

(6) The electricity boards should permanently and publicly abandon restrictive conditions embodied in old contracts.

(7) Charges for connecting gas or electricity to new consumers should be levied only when the costs of connection are exceptionally high and should reflect actual costs and not prospective revenue.

(8) The Ministry of Fuel and Power should, in co-operation with local authorities, provide a fuel information service in all large towns.

(9) Within an appropriate framework of prices and tariffs, competition between the gas and electricity industries should continue.

(10) The Minister of Fuel and Power should be assisted in his general control over the price policies of the nationalised fuel and power industries by the establishment of a specialised Tariffs Advisory Committee.

## Co-ordination in Production

It has been proposed that a planning body should be created with powers of control over the fuel and power industries. At the other extreme it is suggested that the present system of collaboration in specific projects as they arise is sufficient. The Committee sets out what seem the main purposes of arrangements for co-ordination in the production and distribution of fuel and power:—

(i) To facilitate joint planning in the supply of fuel and power, including the development of new techniques.

(ii) To collaborate with the Minister of Fuel and Power's Scientific Advisory Council and other

scientific bodies concerned in promoting research and development involving more than one of the fuel industries.

(iii) To secure routine collaboration at all levels.

(iv) In the last resort, to ensure collaboration where the interests of one industry might not coincide with wider interests.

This last objective has been most in the minds of those who advocate a planning authority with executive powers over the fuel industries. There may be projects requiring combined operation between two or more fuel and power industries which will harm the interests of one industry while benefiting the community as a whole; or there may be large economies possible by avoiding some duplication of service by two fuel and power industries, each of which is convinced that it can do the service better than the other and that it will be accepted as better by the consumer. The problem is how to secure effective co-operation for dealing with such matters. The Committee has four reasons for thinking that a planning authority with executive powers is not the answer:—

(1) To be effective, such a body would need to wield very great power over the individual fuel industries. But it is important for their efficiency that their managerial responsibility should not be reduced.

(2) The Minister of Fuel and Power has a general authority in the national interest over the policies of the nationalised fuel industries. He could direct a nationalised industry to act in the national interest, even to its own apparent detriment. In giving such direction, however, the Minister would be responsible to Parliament. But if large executive powers were vested in an intermediate authority over the fuel industries, this Parliamentary control would be weakened, and power would be diffused between the Minister and the executive planning authority. This the Committee would regard as an unsatisfactory state of affairs.

(3) Some degree of overlapping in the services that the different fuel industries offer is not necessarily uneconomic or undesirable; competition (in a certain framework) should continue between the fuel industries.

(4) It would not be practicable to bring the oil companies under the control of a planning authority with large executive powers, though oil must have a place in fuel and power co-ordination.

## Joint Planning Board

Though the Committee rejects the idea of a planning body with large powers over the fuel industries, it is not satisfied that present arrangements for co-operation on production and distribution problems between the fuel and power industries are adequate. It sees the need for some new type of joint organisation of the industries for this purpose. It recommends that the Minister should establish a Joint Planning Board for fuel and power industries, composed of representatives of the nationalised fuel boards, including the North of Scotland Hydro-Electric Board. This Planning Board should include also representatives of the Ministry and possibly the Chairman of the Minister's Scientific Advisory Council. There should be an independent Chairman appointed by the Minister. This Board would not itself possess powers to override the authority of the constituent industries. The representatives of the fuel and power industries should be members or chief officers of their governing bodies. The status and authority of the Chairman would be very important since, although he could in the last resort ask the Minister to intervene to secure sufficient co-operation from any of the nationalised industries, the success of the Planning Board would depend upon the extent to which its members co-operated freely and fully in schemes which offered the prospect of large economies to the country.

The Planning Board would be assisted by a staff composed of people seconded from the fuel industries and from the Ministry of Fuel and Power. This staff, directly under the Board's control, would have the job of working out plans involving the co-operation of the different fuel industries. They would be headed by a full-time officer of high competence and experience.

## Certain Recommendations in Summary

(i) New standards of performance based on achieving a room efficiency of the order of 40% with coal should be determined for solid fuel room-heating appliances.

(ii) The production of high-efficiency open fires of 'utility' pattern capable of easy installation in existing fire openings and with convection heating and a restricted throat should be encouraged.

(iii) The production of simple devices for insertion in existing flues to restrict the chimney throat should be encouraged.

(iv) Financial incentives should be provided for the installation of fires of the new standard and for improved insulation of houses.

(v) The present scheme for Government loans for approved fuel saving installations should be amplified, or more attractive terms.

(vi) The investigation of methods for the total gasification of coal should be encouraged.

(vii) Electricity tariffs should discriminate in charges between peak and off-peak use.

(viii) Immediate steps should be taken to make extensive practical trials of the various methods of measuring or controlling the consumption of electricity at system peak hours.

(ix) The maximum demand tariff should normally be on a monthly basis.

(x) Tariffs for standby and similar supplies of electricity should directly reflect the costs of administration involved and of connecting and supplying the consumer.

(xi) The prices charged by gas boards should reflect local differences in costs of supply.

(xii) The electricity boards should permanently and publicly abandon restrictive conditions embodied in old contracts.

(xiii) Charges for connecting gas or electricity to new consumers should be levied only when the costs of connection are exceptionally high and should reflect actual costs and not prospective revenue.

(xiv) The Ministry of Fuel and Power should, in co-operation with local authorities, provide a fuel information service in all large towns.

(xv) Within an appropriate framework of prices and tariffs, competition between the gas and electricity industries should continue.

(xvi) The Minister of Fuel and Power should be assisted in his general control over the price policies of the nationalised fuel and power industries by the establishment of a specialised Tariffs Advisory Committee.

(xvii) The Minister of Fuel and Power should establish a Joint Fuel and Power Planning Board.

# Personal

**Mr. Gabriel Brock,** F.I.C.A., Ireland, has been co-opted to the Board of the Alliance and Dublin Consumers Gas Company, in the place of the late **Mr. John McCann.** Mr. Brock has been one of the stockholders' auditors for the last eight years.

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**Mr. Roy C. Orford** has been appointed patents manager of Power Jets (Research & Development), Ltd., which he joined in March of last year. Educated at Truro School and the University of Bristol, during the early part of the war he worked in the transmission department of the General Electric Co., Ltd., at Coventry. After the war he became a development engineer with Waymouth Gauges & Instruments, Ltd., Godalming (Surrey), joining the patent department of Standard Telephones & Cables, Ltd., in 1947.

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**Mr. D. C. Cross,** Manager of the Lea Bridge District of the North Thames Gas Board, is retiring on September 30 on completion of a service of 50 years with the district where, before nationalisation, he was Engineer and Manager of the Lea Bridge Gas Company, a position in which he succeeded his father, Mr. F. W. Cross. From October 1 there will be a division of responsibility in the district. **Mr. F. Dawson,** Station Engineer at Harrow, will become Station Engineer at Lea Bridge, and **Mr. N. H. Davies** will become Local Manager there. Both Mr. Cross and Mr. Dawson are past Presidents of the Southern Association of Gas Engineers and Managers. Following the appointment of Mr. Dawson, **Mr. A. G. Herber** will become Works Manager at Harrow from October 1.

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**Sir Harold West,** Managing Director of Newton Chambers & Co., Ltd., was at Sheffield on September 9 elected 317th Master Cutler of the ancient Company of Cutlers in Hallamshire. Sir Harold is also Managing Director of Thorncliffe Coal Distillation, Ltd., and Chairman of the Institute of Industrial Administration, and was formerly President of the Sheffield Chamber of Commerce. At the autumn meeting of the North British Association of Gas Managers four years ago, he gave a memorable address on 'The Thorncliffe Experiment,' in which he described the measures for industrial co-operation which had been successfully adopted in his Company. 'As a Company we are very concerned with the proper development of the gas industry,' he said, 'having long standing contacts with Murdoch, Woodall, Sir Arthur Duckham, and others, and if anyone cares to come and see the scheme in operation he will be made very welcome.'

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**Mr. Henry Nimmo,** M.I.C.E., M.I.MECH.E., M.I.E.E., who has been Chairman of the General Council during the past two years, has been elected President of the Engineers' Guild in succession to **Mr. Robert Chalmers,** O.B.E., whose term of office expires on September 30. Mr. Nimmo is Chairman of the Southern Electricity Board and a Part-time Member of the British Electricity Authority. Among his many other activities, he is Chairman of the Electrical Development Association, a Member of Council of the British Electrical and Allied Industries Research Association, and Chairman of the B.S.I./E.D.A. Advisory Committee on Electrical Appliances and Accessories (affiliated with the International Commission on Rules for the Approval of Electrical Equipment) and Member of Council of the British Electrical Power Convention.

# Obituary

**Mr. F. P. Dawson,** who was formerly Southern Manager of John Wright & Co., Ltd., one of the subsidiary companies of Radiation Ltd., died on August 22. Mr. Dawson joined the Company in 1904 and retired in December 1947.

# Diary

**Sept. 23.—West Midlands Gas Sales and Service Association:** 'On the Spot,' by R. J. Gregg, Publicity Manager, Gas Council; at Midland Institute, Paradise Street, Birmingham.

**Sept. 24.—Wales Juniors:** Whole day meeting, Pontypool Gas Welfare Hall, Trosnant, Pontypool, 11 a.m., induction of H. Buckley as President; luncheon, Clarence Hotel, Pontypool, 1.15 p.m.; visit to Pontnewydd Tinstamping Co., 3 p.m.

**Sept. 25.—North Thames G.C.C.:** Westminster City Hall, Charing Cross Road, W.C.2, 2.30 p.m.

**Sept. 26.—North of England Section, I.G.E.:** Meeting at Newcastle-upon-Tyne. Paper by K. E. Brown, 2.15 p.m.

**Sept. 26.—Manchester and District Section, I.G.E.:** Visit to Robert Dempster and Sons, Ltd., Rose Mount Ironworks, Elland, Yorks.

**Sept. 27.—Eastern Juniors:** Presidential Meeting, Arnolds Restaurant, Great Yarmouth, 11 a.m.; Luncheon by invitation of Eastern Gas Board, 12.30 for 1 p.m.; Circular Tour, 2.30 p.m. Ladies invited.

**Sept. 29.—West Midlands G.C.C.:** Queen's Hotel, Birmingham, 2.30 p.m.

**Sept. 30.—Manchester District Juniors:** Extraordinary General Meeting, Manchester, 6.30 p.m.

**Sept. 30.—Wales Juniors (North):** Visit to Coal Washing Plant at Gresford Colliery, 2.30 p.m.

**Oct. 1.—Institution of Heating and Ventilating Engineers:** 'Industrial Radiant Heating,' F. R. L. White, Vice-President, at the Institution of Mechanical Engineers, Storey's Gate, S.W.1, 6 p.m.

**Oct. 4.—Yorkshire Juniors:** Annual General Meeting, Leeds. Address by J. M. McLusky, General Manager, Wakefield Group, North Eastern Gas Board.

**Oct. 4.—Scottish Juniors (Eastern District):** Meeting. Presidential Address by T. R. Cameron.

**Oct. 7.—Midland Juniors:** Meeting. Presidential Address by D. J. Ward.

**Oct. 7.—South Eastern G.C.C.:** Caxton Hall, Westminster, 2.15 p.m.

**Oct. 8.—South Western Section, I.G.E.:** Annual General Meeting, Taunton. Paper by T. H. Pardoe.

**Oct. 10.—London and Southern Juniors:** Meeting. Presidential Address by C. D. Shann.

**Oct. 11.—Manchester Juniors:** Annual General Meeting, Blackpool. Presidential Address of A. K. Howell.

**Oct. 16.—Institution of Mechanical Engineers:** Annual Dinner, Dorchester Hotel, Park Lane, 7 for 7.30 p.m.

**Oct. 16.—Institution of Gas Engineers and Coke Oven Managers' Association:** Joint Meeting, 'Selection of Gas Manufacturing Plant in Relation to Supplies of Coke Oven Gas,' F. G. Pyper, East Midlands Gas Board, at Institution of Civil Engineers, 2.30 p.m.

**Oct. 17.—Midland Section, I.G.E.:** Visit to Four Ashes works of Midland Tar Distillers.

**Oct. 17.—Institution of Mechanical Engineers:** General Meeting, Presidential Address of Sir David Pye, C.B., 'The Art of the Practical Engineer,' 5.30 p.m.

**Oct. 20.—Institute of Fuel:** Melchett Lecture, Dr. D. T. A. Townend, C.B.E., at Institution of Mechanical Engineers, Storey's Gate, S.W.1.

**Oct. 21.—Midland Juniors:** Meeting. Paper by C. P. Astbury.

**Oct. 21.—London and Southern Section, I.G.E.:** Annual General Meeting, London.

**Oct. 21-24.—Dairy Show, Olympia:** Gas Council exhibit, stand 146/147.

**Oct. 30.—North Thames G.C.C.:** Westminster City Hall, W.C.2. 2.30 p.m.

**Oct. 30-Nov. 1.—North Eastern Gas Board:** Conference of Senior Officials, Harrogate.

# NORTH WESTERN MOBILE EXHIBITION

A NEW mobile exhibition of unique conception and design recently completed its first 15-week tour of duty in the North Western Gas Board's area.

Designed to the specification of the Board by a leading London firm of display specialists, Leon Goodman Displays, Ltd., and built by E. W. Campion & Sons, Ltd., of Leicester, the exhibition, which when erected occupies a site of some 700 sq. ft., has appeared at 17 shows in the North West this year with conspicuous success.

*The North Western Gas Board's new mobile exhibition unit ready for the opening of the Clitheroe Agricultural Show.*

At the three-day Liverpool Horticultural Show, of which the mobile unit formed the central feature in July, the Board's exhibit was awarded the gold medal as the most outstanding in the show.

Drawn by an ordinary five-ton lorry, the trailer embodying the exhibition can be used on a variety of sites—from a village green or agricultural showground to a market place or housing estate—to stage 'live' demonstrations of cookery by the Board's home service advisers or for general lectures.

The exhibition is housed in a four-wheeled trailer measuring 22 ft. by 7 ft. when closed for travelling. When erected on its site by its manning crew of two, the outer skins of the unit form awnings extending 8 ft. all round, thus extending the unit's overall size to 38 ft. by 23 ft. The body-work of the trailer is of aluminium and the whole exterior is painted in the Board's colour scheme of flame-red and cream.

The front of the trailer opens out to show a fully-equipped gas kitchen, flanked by gas-burning appliances, easily accessible to the public. The kitchen is self-contained; water is pumped electrically from a tank carried on the trailer, and Calor gas is the fuel used for the 'live' demonstrations, at which a portable microphone fitted to a public address system ensures the complete audibility of the demonstrator.

Where a mains supply is not available, electric power and lighting is provided by a portable generator carried on the towing vehicle, and placed on the ground nearby during demonstrations.

The back and sides of the unit are taken up by seven large three-dimensional display panels. These are educative in purpose, and employ working models, photographs, and statistics to tell visitors something of what the Board is doing against the background of the whole gas industry and of the national economy.

At all shows at which the unit has been used up to the present, a minimum audience of 80 people has attended each of the hourly demonstrations given by the home service staff of the Board, and often the demonstrations have attracted an audience of several hundred.

# Safety Footwear

AS a result of a conference at which representatives of Government departments, the Trades Union Congress, and many sections of industry expressed a desire for a standard for safety footwear, the British Standards Institution has issued a standard specification for men's safety boots and shoes (B.S. 1870, 1952). The new standard supplements B.S. 953—'Strength tests for the protective toecaps of footwear used for industrial purposes'—and lays down minimum standards of make and construction for safety boots and shoes intended to provide safety against blows and satisfactory wear in use.

The new standard was the subject of a Press conference in London on September 9 when Mr. George Denton, Chairman of the British Standards Institution Committee on Safety Footwear, demonstrated the strength of a safety shoe he was wearing by placing it under the front wheel of a bus in Drury Lane and surviving the ordeal unharmed. The device demonstrated was a toecap of specially tempered steel, fitted either internally or externally in the course of manufacture. It weighs only 2 oz.—the weight of an ordinary egg, or less than the weight of a man's felt hat. It is designed to withstand a shock test of 150 ft./lb., the equivalent of a 60 lb. weight dropped from 2½ ft., or a dead weight of three tons.

The granting of a licence to use a B.S.I. mark to a manufacturer includes a provision for regular testing of the toecap by a device in which a 60 lb. weight is dropped 2½ ft. It took 18 months to design and make dies that would be effective. The cap is incorporated in both boots and shoes, as well as in shoes for women. In the case of miners' boots the toecap is on the outside, because miners kneel a lot and scrap their toes on the ground.

Sir George Barnett, Chief Inspector of Factories, said at the Press conference that if safety footwear were more generally used in industry, there would be a marked reduction in factory accidents.

# 'Out-Capitalising the Capitalists'

STOCKPORT Town Council has asked the Minister of Fuel and Power to call for an independent enquiry into the affairs of the North Western Gas Board. A notice of motion by Councillor Edwin Hodson, Conservative, an accountant, was carried by 29 votes to 13, some Socialists not voting against the motion.

Councillor Hodson said he was seriously concerned over the increases in the price of gas and the charge of 2s. meter rent per quarter. He said he wanted the enquiry to be made into administrative charges and the Board's policy of exceptional repairs and loan redemption. He suggested the breaking up of the North Western area into smaller groups, with more local representation. 'The enquiry also ought to consider whether the nationalised gas industry should not give a lead to others in pegging prices.'

The Gas Board had contributed largely to the increase in the cost of living, he said. He charged the Board with out-capitalising the capitalists. The Board should dip into its reserves to help keep prices down during the recession.

Alderman A. M. Watson said the motion was one dealing with a national issue. The Association of Municipal Corporations was dealing with various matters such as electricity and gas tariffs. Of 103 undertakings absorbed by the Board, 68 had charged meter rents before vesting day.

He alleged that before vesting day, local authorities deliberately increased the salaries of their top executives in gas and electricity undertakings so that boards would have to pay the higher wages when they took over. 'They were milking the taxpayer to injure nationalisation,' he said.

# INSTITUTE OF FUEL 1952-53

IT is becoming a practice with the Institute of Fuel to select one aspect of fuel technology for special study and presentation. This year the subject is 'Ash and Clinker in Industry.' At the main conference to be held at the Institution of Mechanical Engineers in London on October 28 and 29 11 papers are to be presented and discussed. L. J. Edgcombe and Dr. A. B. Manning open with the 'Origin and Nature of Ash; Sampling and Analysis' followed by A. Grounds and A. M. Wandless on 'The Mineral Matter in Coal and its relation to Coal Preparation problems,' and W. G. Marskell and C. W. Pratt on 'Ash and Clinker in Practice—Handling and Disposal.' These are followed by Dr. H. E. Crossley on 'External Boiler Deposits,' W. F. Simonson on the design of plant as affected by ash, Dr. A. C. Dunningham on 'Ash and Boiler Efficiency.' F. B. Karthauser writes on the utilisation of high-ash coals, and E. J. C. MacDonald and U. V. Murray on recent work by B.C.U.R.A. on the effect of ash in the performance of shell boilers. A. Fitton deals with ash and atmospheric pollution, and T. F. Hurley with ash and the coal-fired gas turbine, while of particular interest to us is a brief paper by L. G. Townsend on the influence of ash on the operation of gas producers in the gas industry.

Four of these papers have been selected for presentation and discussion at a whole day conference staged by the N.W. Section in Manchester in December, while three others will be discussed at an afternoon session in February. The S. Wales Section is to discuss two of the papers, while Yorkshire and Scotland have selected one each.

The Melchett Lecture will be delivered in London on October 20 by Dr. D. T. A. Townend. National fuel policy is to be the subject of an address by Captain W. Gregson to the N.W. Section at its annual meeting in April by which time it is expected that the Committee presided over by him will have reported to the Minister, while Mr. Gerald Nabarro, M.P., is to address the Scottish Section on the 'Ridley Report and After' in January, and the East Midlands Section is staging a forum on a national fuel policy in a joint meeting with the Incorporated Plant Engineers at Nottingham on October 16.

Coal in several aspects naurally takes the lion's share of the programme after the ash symposium. Among these papers will be E. H. M. Badger on experiments in sampling, R. G. Jarvis on railways and coal, Dr. Simpson on opening a new colliery on 'horizontal' methods, two papers on preparation by Dr. J. Bronowski, and Dr. A. A. Hirst respectively. R. L. Brown will describe some of the work of B.C.U.R.A. and C. A. Masterman will report progress in underground gasification.

Boilers and combustion generally are covered by T. H. Lindsay and P. Pilkington on spreader stokers (London), C. W. Drane on feed water conditioning (N.W.), Dr. H. E. Crossley on boiler fouling and corrosion in power stations (E. Mid.), Dr. E. G. Ritchie on performance of shell-type boilers (Scot.) D. Burns on instruments and automatic control of small and medium-sized boiler plants (Scot.). Professor A. L. Roberts will deal with refractory recuperators (London) and Dr. J. White with refractories related to hot-face insulation (Mid.), Dr. E. G. Ritchie with peak steam demands and thermal storage (E. Mid.), and Dr. R. G. Temple will address the Midlands Students Section on the gasification of pulverised fuel.

Methane from the coal measure will be dealt with by S. J. Young on the workings at Point of Ayr Colliery (N.W.) and by L. T. Minchin under the title 'Coal Measures as a Source of Methane' (S. Wales).

Domestic heating comes in for some attention. F. C. Lant and Dr. J. C. Weston are repeating their paper on an investigation of whole-house heating to the Yorkshire Section, while Dr. J. C. Weston is dealing with house heating at a joint session of the N.W. Section with the Smoke Abatement Society in Manchester on October 15. E. Brooks is covering some of the same ground in Cardiff in April. L. L. Fox is to discuss the efficiency of solid fuel domestic space heating appliances in London in January. 'Let there be Light' is the title of the announcement of a joint meeting of the Burnley and District Smoke Abatement Advisory Committee to be addressed by S. N. Duguid in April.

Miscellaneous items of the programme are Professor O. A. Saunders and N. W. Thring on 'The International Flame Radiation Trials at Ijmuiden' (London), F. C. Lennard and J. E. O'Brien (E. Mid.) P. E. Montagnon on 'The Heat Pump' at a joint meeting with three other societies at Loughborough College (E. Mid.), G. J. Gollin on 'Flame Radiation and Furnace Design' (Mid), and J. A. Sargrove on 'Electronics Applied to Industrial Processes' (S. Wales).

## Sales Management

A REVISED edition of the *Examination Syllabus and Regulations* has been issued by the Incorporated Sales Managers' Association. Particular attention is drawn to amendments to earlier editions of the booklet, now incorporated in the current edition. There is a complete revision of the qualifying examination syllabus. (This syllabus was printed and circulated separately in March, 1952; it is now included in the main booklet). Regulations governing entry to, and exemption from, the new qualifying examination are included, and there is a revision of the initial student registration period from six years to four years. This ruling will effect all students now registering.

Revisions are also made in the scale of examination entry fees, and of the syllabus for the 'Market Research' in Part I of the final examination. No major alterations to syllabus content have been made; the revised wording will, it is hoped, clarify syllabus content for both tutors and students.

The title of 'Budgetary Control and Sales Forecasting' (a subject in Part I final) has been amended to 'Budgetary Control.' A paragraph 'Sales Forecasting' has been included in the syllabus content, again with the object of assisting tutors and students in their studies.

**North of England Section, I.G.E.**—The next meeting of the Section is to be held at the Market Street distribution premises of the Newcastle division of the Northern Gas Board at 2.15 p.m. on Friday, September 26. A paper will be presented by Mr. K. E. Brown, Distribution Engineer to the Newcastle division, which will be followed, time permitting, by a visit of inspection of the Market Street premises.

## Lynmouth Relief

CONSEQUENT on the appeals made by the Lord Lieutenants of Devon and Somerset, the Southern division of the South Western Gas Board agreed to collaborate to the fullest extent by offering the facilities of showroom windows to support local appeals. Through the co-operation of local newspaper offices and the Press Association enlarged photographs were obtained of the flood disaster scenes and these were displayed in showroom windows. Collecting boxes were made available for public contributions.

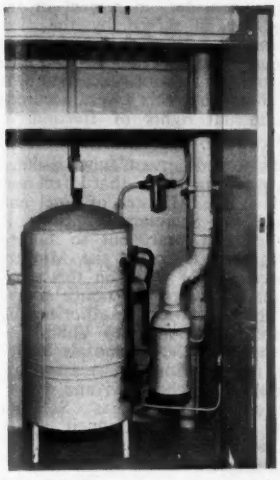
The sum collected in this connection amounted to £695 at September 3. Of this sum no less than £432 was collected within the Torquay sub-division, the majority of which was contributed at the Torquay showroom's collecting centre, where a whole window was devoted to the appeal immediately following the disaster.

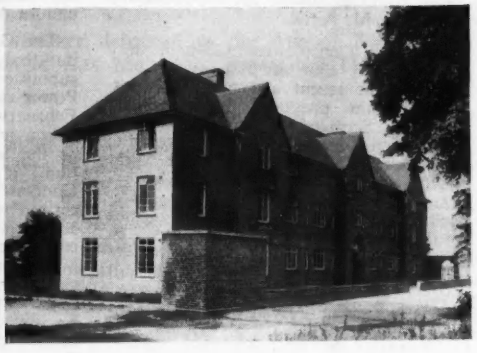
Among the gifts which have been sent to Lynmouth from all parts of the country is a large consignment of disinfectant to assist the British Red Cross in its campaign to check potential infection. Newton, Chambers & Co., Ltd., have sent supplies of Izal sufficient to make 12,000 gal. of disinfectant fluid.

**Coke Fires in Housing Estate.**—Recently the Mayor of East Ham (Alderman A. Prior), accompanied by the Mayoress and the Chairman of Brentwood U.D.C. (Councillor E. R. D. de Rougemont), opened the first houses to be completed at the East Ham Housing Estate at Ingrave, near Brentwood. This scheme of the County Borough of East Ham will ultimately consist of 400 houses, the first 140 of which are now in course of construction. Gas ignited coke fires with back boilers are being installed in each of the houses in the first section to be constructed.

# MARRIED OFFICERS' QUARTERS

IN the recently completed married officers' quarters of the Territorial Army at Blackheath, photographed on the right, each flat has been fitted with a New World C.38 Circulyn circulator and scale reducer, combined with a 30 gal. lagged cylinder, as shown on the left. The installation was carried out by the South Eastern Gas Board.





## Call for Lower Productivity

HOW to reduce Britain's output of one particular product—coal smoke—will be the theme of the National Smoke Abatement Society's conference at Portsmouth on September 24-26. One session will in fact discuss incentives for lower productivity, in both industry and the home. The conference will hear important new evidence on air pollution and cancer of the lung, to be given by Dr. Percy Stocks, former Chief Medical Statistician of the General Register Office and now Senior Research Fellow of the British Empire Cancer Campaign.

The 400 delegates, representing local authorities, Government departments, industry, and technical associations, will also hear a report by an American speaker on how Los Angeles is tackling its notorious 'smog' (smoke-fog) problem, and reports of progress of many kinds in this country. The Des Voeux Memorial Lecture will be by W. R. Hornby Steer, Standing Counsel to the Society, on 'Smoke and the Law.'

Alderman Professor F. E. Tylecote, of Manchester, will deliver his first Presidential Address, and there will be a technical session on air pollution problems in the iron and steel industry, by Professor R. J. Sarjant, of Sheffield University.

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**Institution of Gas Engineers.**—Now available from the Institution at 1s. 6d. per copy are the following publications: Presentation, Discussion, and Reply relating to 'Water-in-Tar Emulsions,' by S. C. Porter (Publication No. 408/199); Presentation, Discussion, and Reply relating to 'Investigations into a New Method of Effluent Liquor Purification,' by C. Cooper and W. E. Bouch (Publication No. 399/194); Presentation, Discussion, and Reply relating to 'Recovery of Pure Sulphur from Spent Oxide,' by F. A. Burden and W. B. S. Newling (Publication No. 397/192).

## 'High-Handed Methods'

COMMENTING on a report before Bristol City Council that the recently revised tariffs of the South Western Gas Board would put £4,500 a year on the Corporation's gas bill, Alderman Sir A. Havergal Downes-Shaw made complaints of 'high-handed methods of operation' by the Board.

He described the gas undertaking as the 'unhappiest' of the nationalised industries and said he would give examples of the high-handed attitude of the Board.

Sir Havergal said that as a member of the Board of Governors of Bristol College of Technology he knew that before gas nationalisation, equipment belonging to the gas company was used at the college to train pupils for posts in the industry. When the Gas Board came into being it informed the College that it was not obliged to continue the loan of the equipment.

'I am happy to tell the Council,' continued Sir Havergal, 'that the Governors of the College acted with spirit. They sent a message to the Gas Board saying that if it was not compelled to supply the equipment neither was the College compelled to train Gas Board apprentices.'

The second example was as 'breath-taking' and 'astonishing.' He said that as a member of the rating committee of the Association of Municipal Corporations he learned that the Gas Board had filed an application with the Inland Revenue asking that the gas undertaking assessment be reduced from £35,000 to £1,000.

Another member of the City Council, Miss Jessie Stephen, deputy chairman of the South Western Gas Consultative Council, said the Board's critics would get a shock. She added that they had representatives on the Consultative Council who would supply information. She wished to point out, however, that of the 27 members only seven were sympathetic to nationalisation.

## Summer School on Welding

THE British Welding Research Association recently held its second Summer School on Welding at Ashorne Hill, Leamington Spa. A total of 275 student members attended the school which was of two weeks duration. Lectures and demonstrations relating to practical aspects of welding were included in the first week while the second week was devoted to more specialised subjects such as metallurgy and physics of welding, testing and inspection, design by analysis and experiment, etc.

Altogether, over 70 lectures were given by a large group of scientists and engineers from industry and the universities, and from research organisations including the B.W.R.A. A number of member firms of the Association provided equipment to demonstrate the latest advances in welding technique and processes and also the application of modern methods of non-destructive testing.

As in 1951, the School was eminently successful and many requests for a similar training course next year have been received by the Association. Consideration is therefore being given to holding a third school in the spring of 1953.

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## Goods Vehicles Enquiry

THE Minister of Transport, Mr. Alan Lennox-Boyd, is to carry out a sample investigation into the use which is being made of the country's road goods vehicles. Between 7,000 and 8,000 vehicles, representing a complete cross-section of existing fleets, will be picked at random, in their various unladen weight groups, from records kept in the offices of the licensing authorities. Nationalised vehicles, run on behalf of the British Transport Commission, will also be included in the sample.

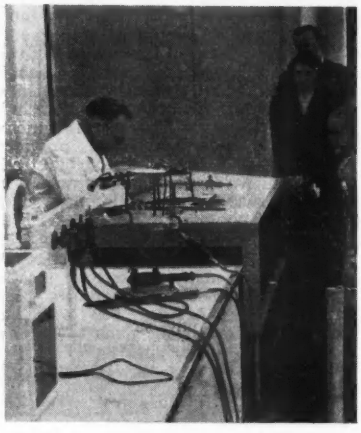
Operators of the vehicles concerned will be required to fill up and send to the Ministry a form giving details of the movements of each vehicle during the seven days beginning September 22. The form will also show the nature of the goods carried, the maximum load carried during a journey, the mileage run (loaded over 50% capacity, loaded under 50% capacity, and empty), the amount of fuel used, and the names of the places where journeys started and ended.

A similar investigation was made in May, 1948. Since then several hundreds of thousands of additional vehicles have been brought into use and fuel rationing has been abolished. The information, which it is hoped will be available by March of next year, is needed primarily for inclusion in the statistics about road goods transport which are being collected for international study in connection with the work of the Economic Commission for Europe and the Transport and Communications Commission of the United Nations. It will also fill many gaps in existing statistical records of the industry in this country and provide material for presenting an up-to-date picture of the industry as a whole.

## Taunton Industries Fair

AS on past occasions the South Western Gas Board stand at the Taunton Industries Fair was designed by the Divisional Publicity Department in co-operation with the Taunton Sub-Division and attracted considerable attention.

The sales results were satisfactory, details of which are as follows: Cookers 7, water heaters 23, washing machines 1, wash boilers 12, coke fires 4, refrigerators 2.



*Glass blower demonstrating the use of a gas flame in the manufacture of miniature animals in glass.*

Apart from the main stand within the exhibition, the Taunton Sub-Division acquired additional space in a separate marquee for cookery demonstrations and film shows, and also obtained the services of a professional glass blower who showed the manufacture of glass miniature animals by the use of a gas flame. Estimated attendance at the cookery demonstrations and film shows was between 3,000 and 4,000.

## North Western Gas Grid

IN the region around Manchester the North Western Gas Board has now linked up six of its 17 operational groups in an extensive gas grid which serves no fewer than 45 towns. This has been accomplished by laying 52 miles of arterial mains between key production stations. The total cost has been £729,857.

As a result gas can now be transferred freely between the Bolton, Manchester, Mid-Cheshire, North Cheshire, Oldham-Rochdale, and Peak regions. The uneconomic gasworks at Hayfield, Knutsford, Marple, New Mills, and Wilmslow have been closed.

Another important inter-linkage has been completed between the Liverpool and South Lancashire regions by connecting the Board's production stations at St. Helens and Wigan. As a result, the works at St. Helens and Wigan are now being operated at 100% capacity—*i.e.*, on the 'base-load'—and gas is being passed from the South Lancashire area to the Liverpool area, thus enabling the Liverpool works to curtail greatly the use of imported oil for gasification.

## 'INDUCEMENTS FOR ELECTRICITY'

A COMPLAINT by the Scottish Gas Consultative Council that electricity boards in Scotland were offering inducements to local authorities to install only electric appliances in new housing schemes, was raised at a meeting of the South East Scotland Electricity Consultative Council, under the chairmanship of Mr. J. M. Airlie.

The Gas Consultative Council, in a letter, stated that it had under consideration at recent and previous meetings, certain proposals of electricity boards in Scotland, regarding electricity supplies to local authorities' housing schemes. These proposals, the letter stated, provided that the considerable charges for supplying and laying electricity mains at new housing schemes would be substantially reduced, or waived altogether, in the event of the housing authority agreeing to install electric cookers and wash-boilers or excluding gas entirely from being supplied to the tenants.

The Gas Consultative Council deprecated most strongly the action of the electricity boards in this matter and had urged the Minister of Fuel and Power and the Secretary of State for Scotland to consider, in respect of the areas in Scotland served by the electricity boards within their respective jurisdictions, the invidious position created thereby, with a view to ensuring that consumers 'were accorded the fundamental rights of freedom to choose as between gas and electricity.'

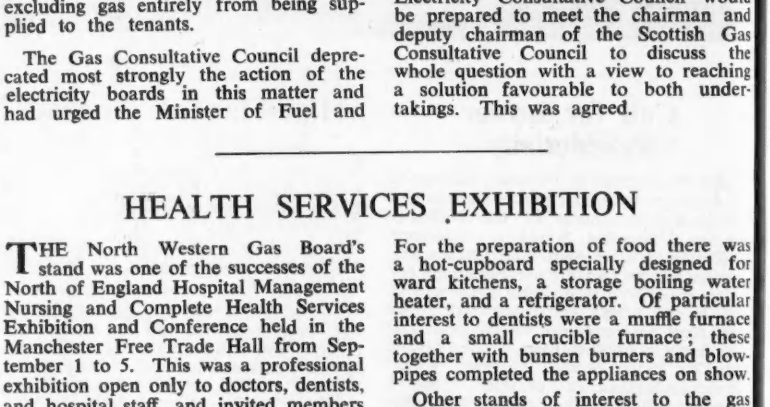
The Gas Consultative Council pointed out that a resolution to that effect was submitted to the Minister of Fuel and Power and the Secretary of State in February of last year, but so far no action had been taken by the Ministry or the Secretary of State on this question. It had come to the notice of the Council that electricity authorities in certain areas continued to submit to local authorities the proposals under complaint. The Council accordingly asked whether the chairman and deputy chairman of the South East Scotland Electricity Consultative Council would be prepared to meet the chairman and deputy chairman of the Scottish Gas Consultative Council to discuss the whole question with a view to reaching a solution favourable to both undertakings. This was agreed.

## HEALTH SERVICES EXHIBITION

THE North Western Gas Board's stand was one of the successes of the North of England Hospital Management Nursing and Complete Health Services Exhibition and Conference held in the Manchester Free Trade Hall from September 1 to 5. This was a professional exhibition open only to doctors, dentists, and hospital staff, and invited members of the public.

The Board's stand featured appliances of particular interest to hospitals, doctors, and dentists. For general hospital purposes these included a fully automatic gas-fired steam boiler, a gas-heated bowl steriliser, and an instrument steriliser, an incinerator for the disposal of soiled dressings, etc., and a water-still. For the preparation of food there was a hot-cupboard specially designed for ward kitchens, a storage boiling water heater, and a refrigerator. Of particular interest to dentists were a muffle furnace and a small crucible furnace; these together with bunsen burners and blowpipes completed the appliances on show.

Other stands of interest to the gas industry included those of G. F. Bartlett & Son, Ltd., and Modern Kitchen Equipment Co., both of which displayed many gas appliances for large-scale catering. On the stand of J. Woolley & Co. was an interesting working exhibit of an ampoule filling and sealing machine, the sealing being accomplished by pressure air/gas burners; this stand also included an automatic gas heated autoclave.



*The North Western Gas Board's stand at the Health Exhibition.*

# DOMESTIC SPACE HEATING AND THE NATIONAL ECONOMY

By HAROLD HARTLEY, C.B.E., D.Sc., Hon.M.Inst.Gas E.

**William Young Memorial Lecture delivered at the Annual Meeting of the Scottish Association of Gas Managers, September 11, 1952**

UNTIL quite recently it would have seemed Utopian to suggest that we should endeavour to develop a national fuel policy. Such a proposal would have invited the scorn of practical men who were far too concerned trying to find new markets for coal to have any interest in the conservation of the national fuel resources. Production of our primary raw material exceeded demand: idle pits and idle miners seemed to provide the answer to anyone who preached the need for economy or conservation.

An atmosphere of carefree prodigality with our national resources characterised most of the inter-war years. There were, nevertheless, some who viewed with concern the possible exhaustion of our fuel resources and whose innate dislike of inefficiency and waste led them to study the problems of the more efficient use of fuels and to formulate plans for the more effective application of the available resources in the service of the nation. Other public-spirited individuals were led along the same path by different considerations, such as the need for smoke abatement and the preservation of health and cleanliness in our towns. All these trends, although well-established, had not a far-reaching effect in the pre-war period.

The upsurge of social conscience during the war years and the recognition of the need for better living conditions generally as a worthwhile outcome of the sufferings of the war period has led to much thought being given to improvement in the methods of fuel use, particularly in the domestic sphere. The conclusions of the Egerton and Simon reports and a variety of other authoritative investigations of the period are well known. It is not necessary to recapitulate the events of the immediate post-war years in the field of fuel utilisation as these are seared into the minds of all of us in the fuel and appliance industries. The sanguine mood in which early post-war plans were conceived has given place gradually to a grim appreciation that we may be faced with a chronic shortage of our basic material, coal. It is now widely recognised that the desire for improved amenities and living conditions is being thwarted as much perhaps by this as by any other material factor.

## Coal Available

The continued embarrassment of the nation's fuel and power industries in the post-war period has again been recognised in the establishment of the Ridley Committee to consider 'whether in view of the growing demand for all forms of fuel and power arising from full employment and the rearmament programme, any further steps can be taken to promote the best use of our fuel and power resources having regard to present and prospective requirements and in the light of technical developments.' As has been well emphasised by the Federation of British Industries in its evidence before the Ridley Committee, the present direct limitation of industrial and domestic consumption is only a part of the story. The reduction in coal exports as compared with the pre-war level is a serious factor in our overseas balance of payments, and not only reduces our bargaining power abroad but has psychological effects on our potential customers and allies. The supplies of food available throughout the world are steadily decreasing in relation to the populations to be fed. Because of our dependence on the export of manufactured goods and the keenness of world competition in the available markets, it is becoming noticeably more difficult for us to pay for the imports of food we need to live. In due course drastic changes may have to be made in our economy—a plentiful supply of coal will help us to carry on over the critical period.

The possibilities of increased coal production have been closely studied and the conclusion seems inescapable that in spite of increased mechanisation and other aids to efficiency the curve of coal production will flatten out well below the 1913 figure of 287 mill. tons a year. Even the most optimistic of the many recent writers on this subject do not expect an annual production of more than 240 mill. tons by 1960, which on the basis of existing trends in the coal-mining industries, and allowing for urgent export needs only, suggests there may be an annual deficit of anything approaching 50 mill. tons.

These facts emphasise the need for the formulation of a national fuel policy, despite the many difficulties there would have to be resolved. Under existing conditions such a policy would almost certainly prove to be restrictive—*i.e.*, it would involve stopping some people from doing things which from their point of view they would judge to be desirable within their own sphere of activity. An expansion of effort in one direction would of necessity involve a limitation of effort elsewhere.

## Domestic Use

In considering how best to allocate the available fuel with a minimum of adverse effect on our national well-being, it is inevitable that the domestic usage should receive critical consideration. Inefficient as is much of the use of fuel in industry even today, it is in the heating of homes that the British compare most adversely with other industrialised nations. While it would be unwise to advocate the wholesale adoption of the practices of any other nation, the unbiased study of the methods of heating used in countries in which fuel is less plentiful than in our own island can provide useful indications of ways in which more effective use can be made of our dwindling resources.

It is more than six years since the issue of the Egerton and Simon reports, and in the interim further progress has been made in the design of domestic appliances. From a national standpoint, however, little benefit by way of fuel economy has resulted, in spite of wider recognition of the importance of thermal efficiency. The more general and thorough testing of appliances under controlled conditions, and a closer study of fuel usage on an 'operational research' basis, has broadened and consolidated our outlook on domestic heating problems. It is worth while, therefore, to review the domestic fuel picture in the light of modern developments, and to endeavour to indicate to what degree the better exploitation of those developments could assist in overcoming our present fuel difficulties.

## Need for Appreciation of the Problems

One of the great dangers is over-simplification of the issues. In recent months many optimistic estimates have been published of economies which could be effected by adopting relatively simple expedients. The open fire has been castigated

for its wastefulness, and the suggestion has been made that its replacement by efficient appliances of types already available would lead to a saving of up to 20 mill. tons of coal a year. Such spectacular results are based on comparisons of test-bench efficiencies of fires, but there are many factors which have to be taken into consideration which strongly qualify such conclusions. For example, the experiments on house heating done by the Building Research Station staff at Abbots Langley and elsewhere have led to the conclusion that under ordinary conditions of use the introduction of fuel saving devices only leads to a fraction of the potential fuel saving being effected, because higher standards of comfort are maintained by the householder. Thus it was found that with a 10% improvement in the insulation of the main fabric of an average house, the fuel saved in practice amounted to only 2% of that used specifically for space heating. In the case of improvements in the overall efficiency of the installation, it is found that not more than 30% of the potential savings in fuel are realised, the remainder being absorbed in raising standards of comfort.

While the adoption of appliances of limited maximum burning rate can circumvent this tendency to some extent, those advocating their use will meet with sales resistance; success with them will depend also on the care with which the installation is made. It is essential to limit the air-flow through the room and to seal the appliance to the setting to avoid loss of convected heat. Quite apart from the difficulties of manufacturing the appliances on the necessary scale, a big task of education both of the general public and of architects and builders will need to be undertaken. While, in the interests of fuel economy, any such attempt should be supported wholeheartedly, I think it is inevitable that progress will be slow, and it seems unlikely that the fuel situation during the next few years will be seriously affected in this way. It is obvious that any attempt to impose on the community any single 'ideal' solution is foredoomed to failure. Such action would not only create strong opposition, but would prove an embarrassment to those who had to deal with the supply of the selected form of fuel, and the appliances in which it is to be burnt. It is only by attacking the problem on all fronts simultaneously that there appears to be any hope of attaining quick results.

## Alternative Heating Methods

The perennial discussion of the relative merits of alternative methods of heating has recently risen to a new level of intensity not only in the technical Press, but in the popular Press and on the radio. While the resulting stimulation of interest in improved coal utilisation is a good thing, it is a matter of regret that so much of this discussion is superficial and ill-informed, and at times takes the form of personal prejudice rather than a genuine attempt to arrive at a balanced conclusion. The assessment of the relative efficiencies of coal utilisation by different means is a highly specialised task and a matter on which it is very difficult to reach agreement between the various fuel industries. The economics of any proposed alteration to any existing practice have to be considered not only in relation to the availability of fuel and manufacturing plant, but also to the potentials and resources of the appliance manufacturing industries. Those present will appreciate that the interchange at short notice of different types of coal for different purposes can only be effected to a limited extent, and then perhaps at the expense of the efficiency of the processes concerned.

While greater flexibility in the utilisation of different types of fuel can be expected from the adoption of processes for complete gasification, their introduction on a scale sufficient to affect appreciably the fuel utilisation picture is obviously a long-term process. Even within the relatively narrow limits imposed by the use of conventional methods of generation and gasification, it has to be remembered that the average efficiency of existing plant differs materially from the efficiency of new plant as used in both the gas and the electrical supply industries.

The reactions of the various interests to the idea of a national fuel policy depend largely on the circumstances of the moment. It is understandable that people struggling with existing shortages of manufacturing and generating plant receive suggestions of additional loads with little enthusiasm.

Without attempting to minimise in any way the very real difficulties with regard to capital equipment with which the fuel industries are faced, it must be recognised that there are many factors in the situation which on analysis resolve themselves into psychological rather than practical obstacles. One example of this is the typical British attachment to the open fire, to which reference has been made already. While the potential savings due to the adoption of more efficient coal-burning appliances have been greatly exaggerated, there is undoubtedly in this country a very heavy dead weight of tradition and custom which will have to be overcome before a progressive fuel policy can be implemented. It is most important that the real sources of our difficulties are recognised, and that their solution is approached scientifically.

## Part Played by the Building Structure

One important result of recent discussions has been to redirect attention to the considerable part the building structure itself and the manner of installation do play in determining the practical overall efficiency of heating appliances. For experimental and development purposes in the laboratory the methods of measurement of the heat output of appliances have been improved and expanded so as to provide a more precise and detailed insight into the physical processes involved. For such purposes the appliance has to be studied in isolation as a unit and extraneous effects have to be excluded as far as possible. It is sometimes overlooked that it may be very misleading to apply to actual installations efficiency figures obtained under such test conditions. At the same time, the measurement of heat outputs from appliances installed in houses calls for elaborate apparatus and special techniques owing to the inevitable variations in ambient conditions and the effects of occupancy. There are relatively few published 'field' studies of house heating conditions in this country and for most of these we are indebted to the Building Research Station. During the post-war period, Radiation Ltd. has taken steps to extend the available information, with particular reference to whole house heating in small well-insulated houses, and extensive tests under controlled conditions have been carried out. The many quantities, formerly unknown, in domestic heating are now more fully understood, and new installations can be planned with greater confidence.

## Transmission of Heat to the Structure

For all the houses covered in the Building Research Station Survey, the average so-called 'system efficiency' was found to be almost exactly 50%, and as the appliance efficiencies were in many instances undoubtedly well below this figure, it is evident that heat pick-up by the structure makes a substantial contribution, and the general effect of this is to compensate in part for differences in appliance efficiency. At the same time, the conditions of ventilation affect not only the appliance efficiency, but also the heat requirements of a room or building in which the appliance is installed, and a brief reference to recent work, which will be published more fully elsewhere, may be of interest.

It is, of course, generally realised that a substantial amount of heat may be picked up by the chimney from the flue gases from any appliance, but there have been few studies of the amount and effectiveness of this heat for the purposes of room heating. The low thermal conductivities of the building materials concerned lead to considerable lag effects which must be taken into account when intermittent heating is being considered. The Radiation Central Laboratories have recently made some measurements of these effects using an orthodox 9 in. × 9 in. brick chimney. The heat content of the flue gases was determined at four levels corresponding with—

(a) the entry into the chimney,
(b) the top of the chimney,
(c) and (d) two intermediate points.

# FROM DRAWING BOARD . . .

# TO GAS BOARD

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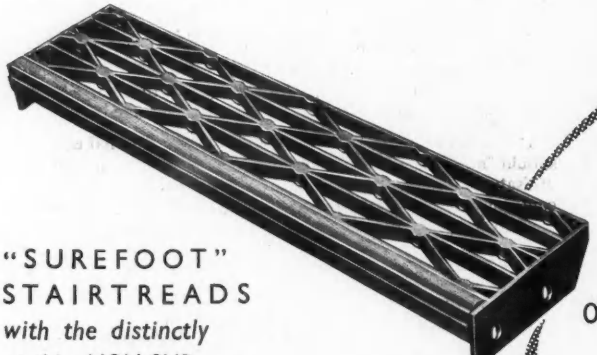

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From these data, the heat released up to any level in the chimney can be calculated. Also, by measuring independently the heat losses from the appliance by radiation or convection, a heat balance for the whole system may be drawn up.

## Need for Change in Fireplace Design

The striking result of these measurements is the high rate of heat release per square foot in the gather of the flue above the appliance, and this confirms the view advanced some years ago that the installation of appliances, free-standing in a recess, the latter being carefully sealed from the chimney, can have a marked effect on the output of heat into a room.

In addressing the Southern Association of Gas Engineers and Managers in 1942, I made the following remarks:—

'During the last year or so I have made many contacts with architects and others interested in post-war housing problems, and have endeavoured to impress upon them the advantage to be gained by a simple modification of fireplace design, a modification which in principle would involve a reversion to an older type. I suggest that the heating appliance should not be built in, but that the chimney recess should be left open, and that the heating appliance, be it intended to operate by coal, coke, or gas, should be designed as an entity which can stand alone within the recess. Heat which normally passes through the back of the fire and is then dissipated would be returned to the room as convected heat, while, by a suitable design of chimney recess, and the provision of an inverted bell construction at the top, the dirtying of the walls by the upward flow of hot air can be prevented. Further, it will be found that after the fire has been burning for a few hours, the whole of the back of the recess is warmed, and provides a large radiating surface at a relatively low temperature, the system adding materially to the comfort conditions of the room itself. If the existing type of gas fire were used in the way I indicate, its effectiveness would be increased by some 25%.'

There is, of course, nothing novel in this proposal, but it is deserving of more consideration than it has received, particularly in the light of the deterioration of the fuel situation as compared with the post-war conditions envisaged in 1942.

The most important result of the reversion to the early form of fireplace would be its great effect in stimulating improvement in the design and construction of domestic appliances. The elimination of the dimensional restrictions imposed by the existing artificial built-in construction would give scope for the use of ingenuity in the application of existing knowledge. It is much more difficult for the technician to use coal effectively than gas or electricity, and the removal of the quite unnecessary handicap imposed by custom would work with 'wonderous usuary.'

The advantages are not confined to any one type of appliance, although obviously the higher the appliance efficiency the less residual or untapped heat there is in the flue gases and the less, therefore, are the potential gains. Thus in the case of a chimney furnace or solid fuel whole house heating unit, both operating at about 75% efficiency, the residual heat in the flue gases cannot be reduced further without incurring the danger of condensation in some situations. The open fire, on the other hand, leaves available a large margin of untapped heat in the combustion products and the benefits would be substantial.

## Effect of Over-Ventilation

The effect of reducing the air flow through a room is also worthy of study. Again, the underlying principles have been well known for years, but for various reasons the inhabitants of the British Isles have in the past had little incentive to exploit such factors. If the air flow through a room is controlled to the hygienic minimum of 600 cu.ft. per hour per occupier, the heat required to obtain comfort can be reduced very substantially as compared with ordinary open fire conditions. For the purpose of illustration we may consider a typical low-cost dwelling such as envisaged in the Egerton Report (pp. 28-34) and calculate the heat losses associated with different rates of ventilation.

Table I illustrates the effect of reducing the ventilation rate from 7,200 cu.ft. per hour (typical open coal fire figures) to 2,400 cu.ft. per hour (hygienic minimum assuming four occupants). It will be seen that with an ordinary brick-built structure a saving of the order of 25% of the total heating requirements is possible, while, if the structural insulation is up to Egerton standards, the potential saving is even greater.

TABLE I.

HEAT LOSSES IN LIVING-ROOM HEATING

*Therms per annum*

| | Ventilation 7,200 cu. ft. per hour | | Ventilation 2,400 cu. ft. per hour | | $\frac{b-d}{b}$ |
|---|---|---|---|---|---|
| | Ventn. *a* | Total *b* | Ventn. *c* | Total *d* | |
| Poor standard of insulation .. | 67.2 | 180.1 | 22.4 | 135.3 | 25% |
| Egerton standard of insulation | 67.2 | 140.8 | 22.4 | 96.0 | 31% |

It will be appreciated that an internal flue transmits a maximum of additional heat into the house, and the positioning of flues on outside walls, which has been common practice in the past, results in substantial wastage of heat to the outside air. It is in these latter situations that the adoption of a free-standing appliance in a recess can be most beneficial.

## Overall Efficiencies

It has been recommended recently that there should be made cheap convector units suitably designed for use in existing fireplace openings. Such a fire can be constructed to give an overall appliance efficiency of 40%, and the heat pick-up by the surrounding structure and chimney may, in favourable cases, increase this to 50% into the living-room and a further 15% of low temperature energy to the rest of the house. Under the same conditions of installation, the open coal fire with stool bottom grate has an efficiency of about 25% and yields a heat input to the room of 35% and a further 20% to the remainder of the house. Using coke as the fuel, the appliance efficiency would be increased to 33% in the standard appliance, and to 55% in the self-contained convector form. The heat pick-up in the chimney would be somewhat less, but the lower standard of combustion normally obtained with coal would offset to some extent the greater potential heat output extractable from the flue gases.

## The Gas Industry

We may now turn more particularly to the position of the gas industry in the light of the general developments which I have summarised briefly. Many considerations point towards the desirability of carbonising a much larger proportion of the nation's raw fuel supply, and attention to the economics of this appears to be an urgent need under existing circumstances. J. E. Wakeford has recently computed that the capital cost per available therm per day of high grade energy is about £70 for gas against £150 for electricity. On the same thermal basis, the quantity of raw fuel used for electric current generation is also more than twice that for gas—the yield of coke being offset against coal consumed.

The contribution of the gas industry to the national economy should not be assessed solely in terms of production and utilisation costs or efficiencies. The industry plays a significant part in minimising the smoke problem. The use in industry and the home of a wide variety of by-products adds to the value of the carbonisation process, and their potentialities must not be overlooked when examining the fuel situation.

The approach of the general public to the adoption of gas for heating is often ill-informed. It is admittedly difficult to express convenience and adaptability in quantitative and tangible terms, but better means could be used for conveying to the public the significance of such factors and in assisting them to visualise their relevance to their own particular circumstances.

E

The use of gas instead of solid fuel for space heating can be regarded in part as a transfer of stoking, fuel handling, and ash clearance from the home to the gas undertaking. Quite apart from the reduction in direct labour involved, there are repercussions in the amount of cleaning needed. Substantial economies can be obtained from the flexibility of usage, and while the value of these will depend on family circumstances, they should be taken into account in any serious comparison of the case for alternative fuels. The rationalisation of gas appliance production so as to give the consumer all available technical advantages at a moderate cost can strongly influence the overall picture. To obtain the best results when using high grade fuels, more refined methods of utilisation must be employed, and a more detailed study is desirable of the conditions under which the fuel burning appliances are to be installed. Progress in gas space heating has been hampered by the lack of exact methods of estimating the heat requirements of rooms and the ventilation rates, and by a lack of understanding of the basic principles involved in comfort. The general tendency in the past had been to reproduce as nearly as may be the conditions of the open coal fire and insufficient attention was paid to the control of ventilation, or to the effective provision of a proportion of convected heat.

A number of types of convector gas fires have been put on the market, but few have been so designed as to ensure that there will be a substantial transmission of heat to the room by convection as the chimney pull increases. The solution of this problem in recent years has greatly increased the adaptability and effectiveness of the convector fire over a variety of conditions of chimney pull. The importance of limiting the overall rate of ventilation through a room is emphasised by the data given in Table I.

## Obsession of the Open Fire

The concept of comfort is difficult to define, and may even vary from one locality to another, owing to differences in living conditions and to acclimatisation. It is nevertheless evident when comparing heating practices in different countries, that our approach to these problems has tended to be narrow. When once the obsession with the conventional built-in open fire is overcome, the use of high grade fuels for space heating can be much more effective than has been generally supposed.

In considering the alternative means by which a high utilisation efficiency may be obtained when using gaseous fuel, a gas-operated heat pump is seen to have attractive possibilities and experimental work in this field has been in progress now for some years. The practicability of a gas-fired unit, in which a prime mover can be employed to 'up-grade' to usable temperatures several times its own consumption of energy, has been established, and a solution of the many incidental problems of low grade heat pick-up, etc., is well advanced. The attractiveness of this development increases as fuel costs rise, but it will almost certainly be many years before large-scale manufacture can be contemplated, even if it should ultimately prove possible to make the development suitable as a popular or large-scale solution for space heating problems.

The next in order of efficiency is the flueless heater. For many years gas has been burned fluelessly, and, as is well known, an efficiency of 90% on a gross basis is attainable. The presence of sulphur compounds in a greater or lesser degree limits the permissible rate of burning in a given space with a given rate of ventilation, and it is not normally practicable to satisfy space heating requirements in full in this way.

There are alternative methods of using gas for continuous space heating at an overall gross efficiency of about 75% in modern flued appliances; examples of these are the chimney furnace and the balanced flue radiator. The thermal advantage of the flueless heater over these appliances is relatively small and the case for the flueless use of gas is correspondingly weakened as compared with the pre-war conditions, in which the comparison had to be made with a radiant gas fire of about 50% efficiency. The convector gas fire has an efficiency of 65%, which can be increased still further. While the flueless appliance may be cheaper to make and install, it is urged that correctly fitted high-efficiency flued appliances will give the consumer more lasting satisfaction, and should be advocated by the gas industry. The emphasis on the convector gas fire should not lead to the assumption that the demand for the usual type of radiant gas fire is likely to decrease. For technical reasons, a source of convected heat cannot influence comfort as rapidly as a radiant source, and where short-period heating is required—as in bedrooms and dining rooms—the high efficiency radiant gas fire, with ample heat output, provides a most effective and economical means of satisfying the requirements. Further, if the fire is installed in a chimney recess in the manner referred to earlier, the appliance will become as economical to use as the more complicated convector fire as normally fitted.

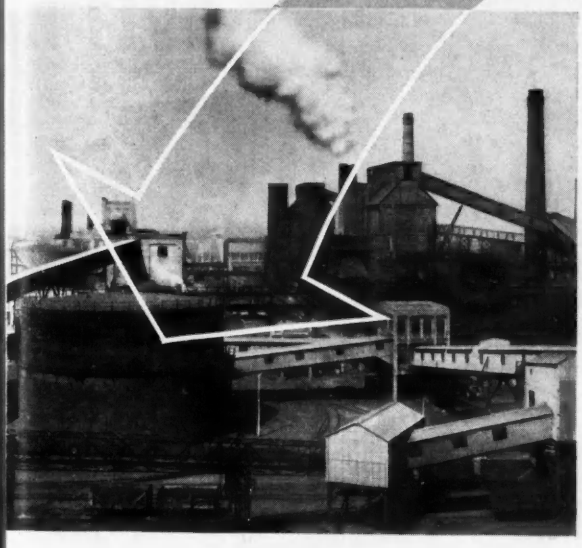
## Load Factors

Sooner or later, in any serious discussion of progress in gas utilisation, the effects of the proposed changes on load factor must be considered. It is recognised that in some areas gas space heating, considered in isolation, may be judged an undesirable load, because of its seasonal character and the embarrassment that an abnormal 'cold spell' can cause under marginal conditions of operation. The severity of the seasonal peak depends on a variety of factors, climatic, operational, technical, and economic, which can only be studied quantitatively in relation to local circumstances. The most important of these brings in the concept of a balancing load, such as summer water heating, which, in my view, should be associated with an extension of the space heating load. Recent developments in the design of gas storage water heaters and circulators, with which many present will be familiar, have done much to minimise the effect of maintenance costs on the economics of water heating. In the past, heavy maintenance costs hampered endeavours to popularise the use of gas for water heating, and prolonged research was necessary to obtain an understanding of and to overcome these difficulties. However, by the use of heaters of the storage type constructed of corrosion-resistant materials, and by the introduction of the 'Scale Reducer' in hard-water districts, the main sources of trouble have been removed. Experience which is now available in areas in which corrosion and scaling were previously rife, has shown that the maintenance period can be increased by a factor of four or five times. A balanced development of the space and water heating loads, using modern appliances, offers a promising means of attaining a high coal economy efficiency, a high load factor, and low maintenance charges. It will also be evident that the increased use of gas at high efficiency for living-room heating shows a better load factor than the current intermittent use of gas fires which tends to accentuate the 'cold spell' peaks. Whole house heating, aimed at maintaining comfortable temperatures throughout a well-insulated house, at all periods of the year, shows even less seasonal variation. It is not suggested, however, that in present circumstances this latter system, as developed to date, is an economic proposition for existing low-cost houses. Its widespread and successful introduction needs the collaboration of architects and local authorities, and can only follow upon a radical revision of tariffs.

## A Spur to Progress

We have so far considered the implications of the availability in this post-war period of high efficiency equipment for the utilisation of gas for space heating. While full use has not hitherto been made of these developments, owing partly to shortages of plant on the manufacturing side, and partly to discriminatory policies in regard to purchase tax and raw material allocation; the knowledge that they are available should act as a spur to progress in other directions. To generalise on the state of an industry is always risky and often invidious, but one sometimes feels that in the pre-war competition with electricity the gas industry missed some of its opportunities and to that extent failed to put the carbonisation of coal in its rightful place in the hierarchy of British industry.

(*Concluded on p. 644.*)



This general view shows plant at the Beckton Station of the North Thames Gas Board. (Photograph by courtesy of the North Thames Gas Board).

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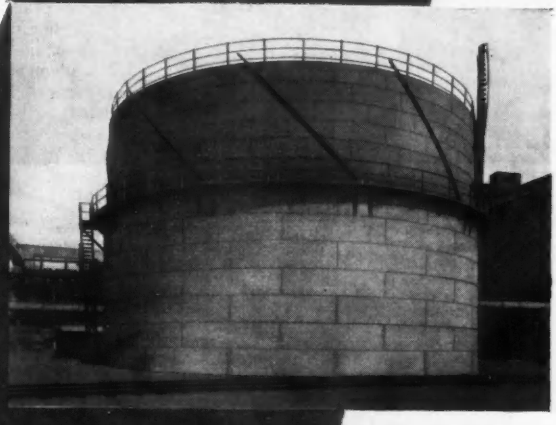

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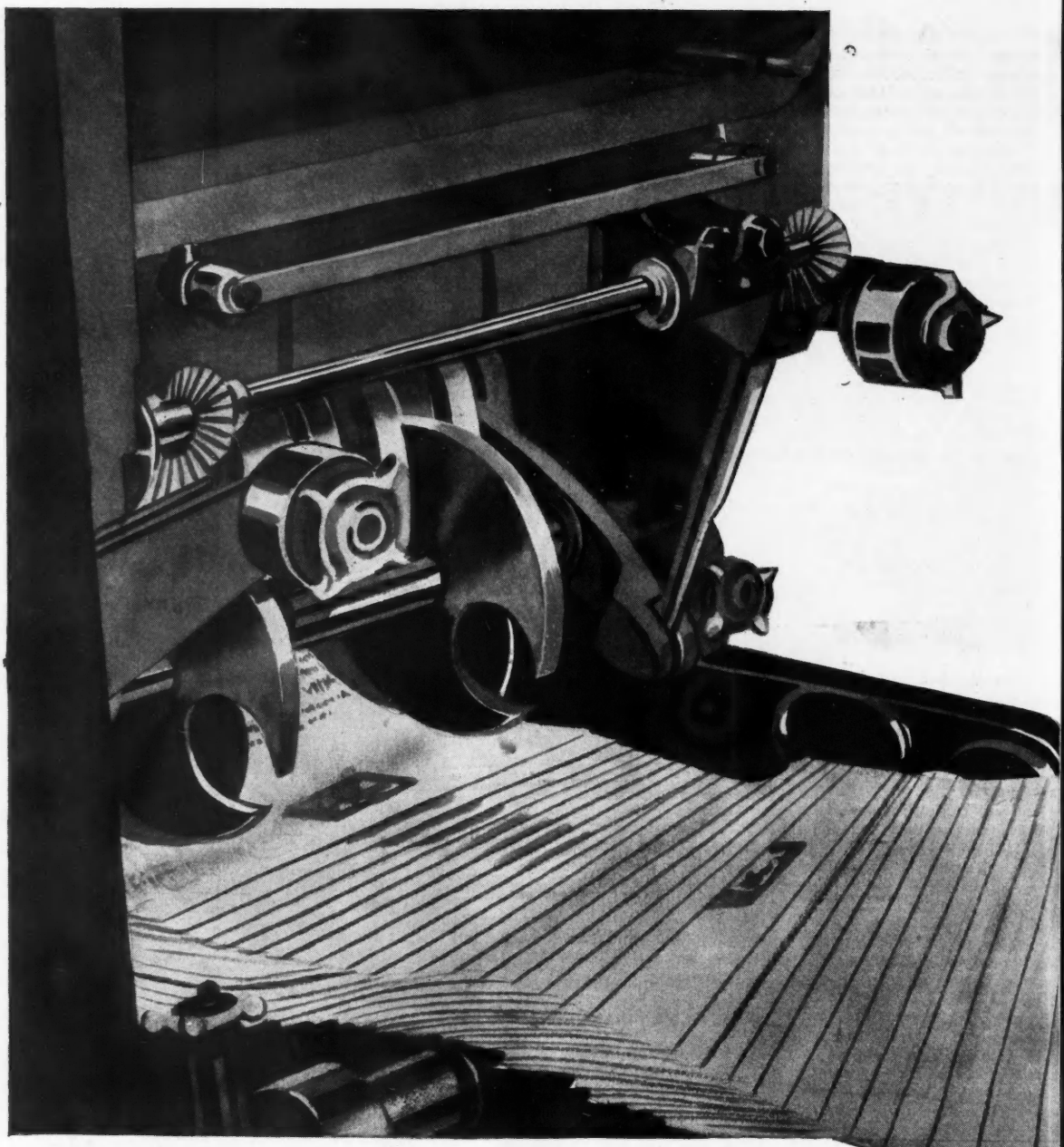

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NEW WORLD NEW WORLD NEW WORLD

The rapid growth of the electrical industry, combined with the post-war limitations of coal production, has been responsible for some of our recent troubles, and few will doubt, in looking back over the events of the last few years, that the national fuel economy would be in a healthier state had the gas industry carried a larger share of the domestic load in the pre-war period. Because electricity can be used for most purposes, its application may not always be desirable in the national interest. Electricity is a high potential form of energy and its use to satisfy low potential needs should not be undertaken lightly. In the domestic heating field, the excessive use of electric space heating by present-day methods is not really necessary or desirable. The overall efficiency of coal utilisation, through the medium of electricity, is well below that attainable either through the medium of the carbonisation process and the gas appliances mentioned already, or, except for intermittent use for limited periods, by burning coal directly in correctly designed appliances in the home.

## Electrical Efficiency

The average efficiency of electricity generation from coal in 1951 was about 21.5%. Transmission losses reduced this to under 20% before the energy reached the consumer. To assume an overall utilisation efficiency of 20% is not unreasonable when it is borne in mind that a substantial part of the peak load which is associated with space heating is carried by older and less efficient generating plant.

In view of the higher efficiency with which coke can be burned, the coke produced by the carbonisation of coal can justly be balanced against the coal consumed. On this basis the thermal efficiency of gas production in 1951 was about 70%. While recognising that there are numerous qualifying factors which must be noted on one side or the other of the balance sheet, it is a fact that the overall coal utilisation efficiency of the modern gas heater is at least double that of the electric fire.

For uses where the thermal storage principle can be adopted and advantage taken of 'off peak' current available from modern plant with an efficiency of 30%, the factor of 2 will be reduced, and with power station improvement leading to still higher overall efficiencies the margin may become less. If the comparison is made with older types of gas appliances, a picture less unfavourable to electricity can be produced. If the investigation is approached in a scientific spirit and all possible qualifications are taken into account, and due allowance made for personal predilections, and for the convenience and flexibility of electrical heating, the conclusion seems definite that from the national standpoint the electric fire is today the least satisfactory of the available alternatives. It would, however, be a great mistake for the gas industry to rest on its oars owing to the temporary embarrassment of the electricity supply industry. It is easy to sit back and criticise that industry for its tariff policies, for the pressing of sales of electric fires in the post-war period, or on the grounds that it has failed to 'cut its coat according to its cloth.' It is not so easy, however, to answer the questions—

> 'How far could the present problems of electricity supply have been avoided if the gas industry had been as vigorous in pursuit of its technically justifiable share of the domestic market as the electrical industry had been?'
>
> 'Has the gas industry faced up fully to its responsibilities that are now manifest in relation to the overall fuel and power position?'

It is by studying the missed opportunities of the past that the most valuable pointers to future action can be obtained. I would therefore suggest that the present time is peculiarly pregnant with opportunity for the industry not only to regain lost ground, but to surge forward to unprecedented levels of activity and service.

Lest it be thought I am taking an unfair advantage of the occasion, I hasten to say that the innate conservatism against which I am tilting is recognised as a general characteristic of British industry, but nevertheless one which is a severe handicap to us in our present difficulties. There is, as we know, no shortage of creative thought and inventiveness in our make-up, but, in comparison with the Americans and the Swiss, we are slow to apply and exploit the results of our ingenuity, with the result that we are out-distanced in the practical sphere. We lack a quality of receptivity to new ideas and the urge to apply them in our own activities.

I have made this digression to show that in speaking of the gas industry in this connection I am merely using it as an apt example and not singling it out for special castigation.

Although primarily a chemical industry, the gas industry has been slow to accept research as essential to its long-term well-being and expansion. Between the wars, research on an industry basis was conducted on a negligible scale, and the establishment in 1940 of the Gas Research Board coincided with the outbreak of World War II, and the diversion of many of its most active members to other nationally-important tasks. Many of the smaller undertakings were operated on a hand-to-mouth basis with a bare minimum of technical control and with little opportunity to benefit from the research which was done by the larger organisations in the industry and by the universities and other research bodies.

With the best technical resources now available to all sections of the industry, and a realisation of the importance of research into all aspects of the manufacture, distribution, and utilisation of gas, the picture takes on a different aspect. In respect of fuel economy, and the availability of efficient and effective appliances, the ball is at our feet as never before. Many people are recognising, somewhat belatedly, that the carbonisation of coal by the gas industry is, from almost every viewpoint, a logical and effective method of getting the last ounce of value out of our most valuable national asset. It rests with us to see that no avenue for more effective utilisation is left unexplored. Through a bold and courageous application of new knowledge, coupled with the traditional thoroughness and reliability with which our industry discharges its duties to the public, the fuel situation in this country can be transformed and the foundations laid for the banishment of austerity not only in the fuel field but in all our indigenous industries which, directly or indirectly, depend upon fuel for their operation and process. In the export field also, as already mentioned, the balance of our payments could be profoundly altered by the export of coal which would be saved if carbonisation were substituted on a larger scale for burning in the customary wasteful manner.

## Co-operation and Team Spirit

In bringing my lecture to a close on this note, I am not unmindful of the qualities of William Young, whose memory we are honouring today; a man whose personality and abilities established for him a unique place in the annals of the gas industry. His friends and collaborators have provided testimony of his practical idealism, his intellectual vigour, and his fertile and creative approach to the many and varied problems with which he was faced. It is such qualities of mind which, in our present situation no less than in the time of William Young, are essential to the continued well-being of our industry and civilisation. To those who argue that the opportunities for the exercise of such attributes have passed, I would reply that the greater complexity of our present fields of activity in no way removes the need, and indeed the obligation, to approach our problems in the spirit of constructive, but nevertheless critical, enquiry which characterises the scientific point of view. It does demand, in addition to those enumerated, the qualities of co-operation and team-mindedness. To the William Youngs, circumstances come as a challenge, and the keen, enquiring mind, inspired by the desire not only to know but to apply its knowledge, has never had more ample opportunity than is presented to us here and now.

While, therefore, we are faced with a situation and with problems and difficulties of an entirely different order from those which presented themselves to William Young, it is, nevertheless, to his qualities of mind, his power to disentangle the essential facts and to turn them to practical account, that we must look to lead us on to success.

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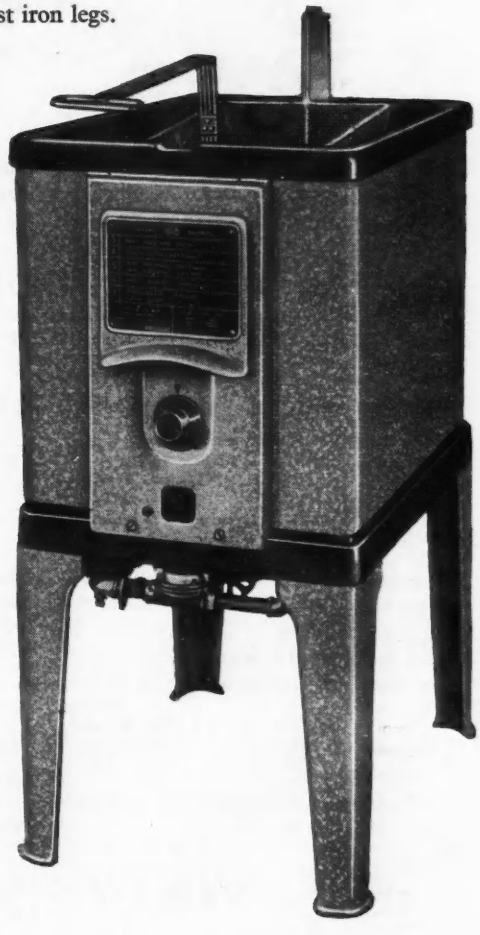

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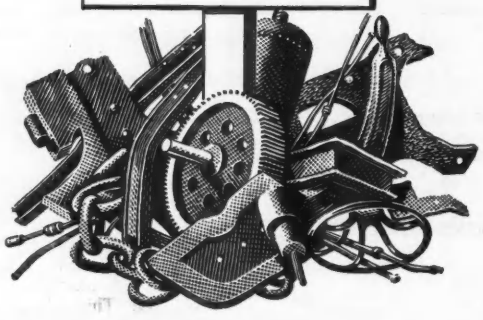
# WHAT EVERY MANAGEMENT SHOULD KNOW ABOUT

# scrap



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See your local scrap merchant. He will be glad to help with dismantling and collection. If you have any trouble disposing of iron and steel scrap, write to the British Iron & Steel Federation for the address of your Joint District Scrap Committee.

**What shall I get for it?**
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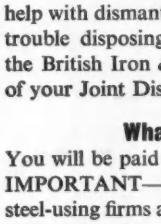

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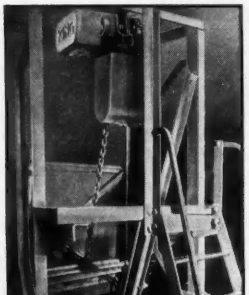

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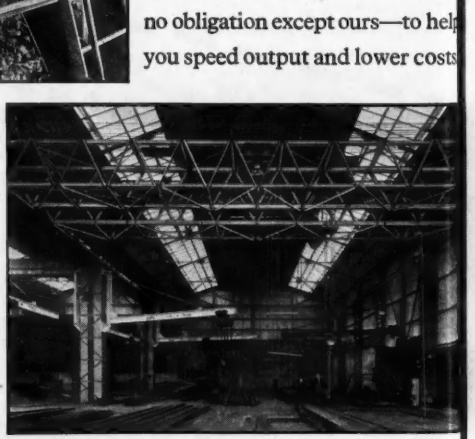

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# Gas in Northern Ireland

By G. WALMSLEY, J.P., M.Inst.Gas E.

Managing Director, Engineer, and Secretary, Londonderry Gaslight Company

**Presidential Address to the Irish Gas Association, Londonderry, September 16, 1952**

IT was in 1931 that Londonderry had the honour of welcoming the members and friends of the Irish Gas Association and with some hesitation I again have accepted the invitation of the committee to occupy the presidential chair for the second time after a lapse of 20 years.

The nationalisation of coal—Great Britain's biggest material asset—is now an accomplished fact. The real worth of that asset, insistently stressed by the gas industry for so many years, is now realised and its profligate use in the past is now only too apparent. Gas and electricity in Great Britain have likewise become State-owned. It would be presumption on my part to make critical comment on this except in so far as the repercussions are felt in Northern Ireland and Eire. I am, however, tempted to say that with the three main fuel industries now in one ownership it should follow that those responsible must assign to each the part it is best fitted to play, so as to ensure that the country's fuel resources—as would normally be the case in any great industrial concern—are used to the best possible advantage. If this were done we should hear less about power cuts and 'spreading the load' in Great Britain, and industry and the public generally would benefit.

Ireland is dependent on coal supplies released by the National Coal Board and here in the north these are allocated by the Northern Ireland Coal Controller. The allocation is fair, but we have a grievance—shared with all gas undertakings—that in the recently revised schedule of coal prices discrimination against the gas industry seems obvious. This is a matter of vital concern to us in Ireland and serves to emphasise the disadvantage we already labour under as compared with our friends in Britain, owing to the high cost of transporting coal from the remote coalfields. Gas undertakings in Eire are at an even greater disadvantage.

Coal in Londonderry is more than three times the pre-war cost and inevitably this, together with the increased costs of oil, labour, and material, has necessitated an increased charge for gas which, however, has increased only 85% since 1939. These figures are probably typical of the relative increases throughout the country. The increased cost of gas to the consumer, moderate though it is when compared with the staggering increases in costs of coal, etc., is nevertheless a cause of concern. As well as being the most popular means of cooking and intermittent heating, gas is the most economical, and our primary object will always be to keep the selling price of gas at a level which will ensure that it remains so.

## Outlying Housing Sites

Londonderry is no exception to the general rule in that the housing sites are on the outskirts of the city, necessitating heavy capital expenditure for mains. Two housing authorities are concerned, the Londonderry Corporation and the Northern Ireland Housing Trust. The Corporation, when schemes in progress have been completed, will have built 1,200 new houses in the post-war years, and the Northern Ireland Housing Trust has 970 new houses either completed or in course of construction in Londonderry. Taking Corporation and Trust houses together in Londonderry we are concerned with a total of 2,170 houses. Our capital expenditure is at the rate of £19 per house. The average annual consumption per house is 110 therms, so that the annual charge on an 8% basis works out at £1 10s. 4d. per house or 3.3d. per therm, which at first sight can hardly be considered an economic proposition.

I would like to acknowledge here that, although the Corporation is responsible for providing the greater number of houses and is also owner of the local electricity undertaking, it does not seek to exclude gas entirely so far as cooking is concerned, although it provided electric fires in bedrooms. The arrangement finally settled upon was that the choice between electricity and gas for cooking should be left entirely to the tenant. It was felt no mistake would be made in agreeing to this arrangement and the result fully justified our expectation, as to date no less than 92% of the tenants have chosen gas cookers. The schemes are not yet completed, but current returns show that this percentage is being maintained and demonstrate beyond all doubt that when freedom of choice is granted the housewife shows an overwhelming preference in favour of the gas cooker.

## Contribution to Capital Outlay

Because of the limited opportunity for tenants to use gas we asked for, and eventually obtained, a contribution of £5 per house erected towards our capital outlay. This reduced our outlay to £14 per house and the annual charge to 2¼d. per therm of gas sold. These figures, taken in conjunction with manufacturing costs and the selling price of gas, leave very little margin. Had we not been successful in obtaining the contribution of £5 per house we should have turned down the project as uneconomic.

Our experience is perhaps unusual in that only the provision of a cooker point would be considered by the housing authorities, but it emphasises the fact that a gas cooker point alone is insufficient to ensure a reasonable return on capital outlay. Every endeavour needs to be made to secure the introduction of additional gas points to increase consumption. A recent census in Great Britain disclosed the fact that over 5 mill., or 35%, of households have no bathroom. What is paradoxically the most promising and yet the most disappointing field of expansion of gas sales lies in the water heating load.

The new housing estates offer great possibilities, but our experience is that the housing authorities say the houses are costing so much already that they cannot see their way to provide water heating facilities other than the usual back boiler. The complaint of the tenants is similar—they cannot buy water heaters because they are too expensive. Politicians are frequently saying, 'It is high time the ordinary housewife's work was recognised and her everyday worries eased.' A quick and economical means of obtaining hot water is only one of the gas industry's efforts in this direction which could be considerably extended if this so called 'luxury tax' was removed from gas water heaters.

Scope for large-scale industrial application of gas here in Londonderry is limited. Apart from the load due to the introduction of gas-fired boilers for steam raising in the shirt factories, most of which have installed such boilers, and part of the bread-making load, our most promising outlet is space heating of factories, public halls, etc., and gas sold for this purpose is increasing steadily. At present the direct industrial load in Londonderry is approximately 20% of the total output and this could be further developed.

Many efforts have been made by the Government to attract new industries to Northern Ireland. Londonderry particularly stands in great need of new industries to absorb male labour. The shirt and collar factories employ women almost exclusively, but the number of men permanently unemployed in the city is about 3,000. Hence it is a matter of general regret that no really large industry which would employ these men

has yet been attracted here despite inducements offered by the Government and corporation in the form of grants, loans, and other substantial aids to firms who are willing to start new industries. Perhaps one might suggest that it would be better and of more general benefit to existing as well as prospective industrial concerns if the Government could arrange for some easing of the burden caused by the high cost of coal to industry in this country due to the heavy expense of transport by sea and rail which at once places all our industrial concerns at a disadvantage compared with similar concerns in Britain, and doubtless explains to some extent the reluctance of industrialists to come to Northern Ireland. The gas industry, in common with other coal consuming industries, and the public generally—which are all dependent on the National Coal Board for supplies—would welcome any effort which could be made to ensure some concession as regards coal prices.

Might one suggest that a case could be put forward when the annual financial adjustment regarding the transfer of any surplus revenue from Northern Ireland to the British Treasury was under review, that coal imports should be treated on a somewhat similar basis to that of agricultural products going from here to Great Britain. If the cost of coal could be reduced by such means, it might be a greater incentive to the establishment of new industries than the inducements at present offered.

The following statistics give an interesting comparison of the progress of our industry in Northern Ireland. Whereas the total output between 1930 and 1940 remained stationary round about 5,000 mill. cu.ft., since 1940 the output has progressively increased from 5,000 mill. to 7,260 mill. cu.ft. in 1950, the most recent year for which statistics are available. This shows an increase of nearly 50% over the whole of Northern Ireland compared with, I believe, 65% in Britain and 52% in France. In Londonderry the corresponding increase is 90%. This, however, is no doubt primarily due to the comparatively large number of housing estates developed and an intensive drive for industrial consumption mentioned previously.

The total number of gas undertakings in Northern Ireland in 1930 was 28 (10 local authority and 18 company) and in 1950 24 (10 local authority and 14 company). The development of electricity supplies throughout the country has no doubt had an influence on the smaller gas undertakings, but undoubtedly this is far outweighed by the effect of the ever-increasing costs of production, caused by the high cost of transport and increased cost of coal, which have evidently necessitated four of the very small undertakings being closed down.

In connection with this, any suggestion of financing electricity irrespective of whether the project is economically such as to meet interest and depreciation charges is a matter which, in my opinion, will inevitably necessitate drastic revision of charges all round, or some form of subsidy. If electricity suppliers alone were subsidised it would be manifestly unfair to gas undertakings who are among the largest ratepayers in the country and also to the majority of the public who use gas, and create a precedent in favour of one section of the community, which would be highly dangerous. The future of the supply of heat, light, and power lies both with electricity and gas (we are large users of electricity for power ourselves), but each has its own sphere and no good purpose to the community can be served by expending money wastefully in putting one or other to uneconomic use.

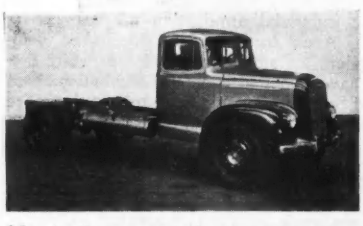
With the ever-increasing demand for smokeless fuels, particularly in the thousands of new houses in course of erection, I again urge our members—as emphasised in my address 20 years ago—to concentrate more and more on the production of coke and its presentation to the public in a suitable form as a smokeless fuel to meet this demand.

Finally I would remind our Government departments that the gas industry has done, and is doing, more than any other agency by its production of gas and coke—the two most economic smokeless fuels—to alleviate that great peril to health, smoke, with all its attendant evils; also that the country is indebted to the gas industry for tar, which is extensively used on our modern highways and which after distillation produces hundreds of most valuable drugs used in medicine and surgery for the benefit of the community.

# Trade News

## Morris Commercial Cars

MORRIS Commercial Cars Ltd., will exhibit for the first time at the Commercial Motor Show (September 26-October 4) the L.W.B. forward control 5-tonner fitted with a 100 b.h.p. O.H.V. 6-cylinder engine. The engine is identical to that fitted in the normal control version and the 16 ft. 6 in. standard body is designed for bulky loads. Features of interest are the engine mounting and the special cab mounting based on experience gained on the mounting of bodies for P.S.V. vehicles and on extensive overseas experience. This model will be available both in long and short wheelbase with the option of petrol or diesel engines. Initial production must, through circumstances, be devoted to export.



*Morris Commercial diesel engined (normal control) 5-ton chassis, similar in specification to the petrol-engined model except that the Saurer 6-cylinder diesel engine is fitted.*

To meet the need for a 1½ ton vehicle with a medium capacity van body, Morris Commercial will show for the first time a new forward control van powered with a 4-cylinder O.H.V. engine having a 4-speed gearbox with provision for a power take-off.

The Morris Commercial 1½ ton 4-wheel drive truck also to be exhibited at the show, is an all purpose vehicle designed to meet every eventuality either on made roads or over adverse terrain, being equipped with a powerful flexibly mounted six cylinder O.H.V. petrol engine with a cubic capacity of 4,196.7 c.c. which develops 72 b.h.p. at 2,750 r.p.m. Varying types of body can be accommodated on the chasis. A towing attachment is incorporated.

Appearing again at the 1952 show will be two Morris light transport vehicles. The 5 cwt. van is established as a favourite with businesses requiring a quick local delivery service. The other light transport vehicle although more recently announced, has already gained a reputation as a versatile performer. Available as a van, pick-up truck, or chassis and cab only with optional cab seating arrangements the Cowley van, which is styled on motor car lines, fills the needs of those who are looking for economy, comfort, advanced engineering, and a spacious body.

## J. H. Sankey

AN entirely new Sankey product just put on the market is Sankey's vitrified buff tile. In supplying its vitrified blue acid and alkali resisting bricks and tiles, the Company has found a need for a tile having similar properties, but in a light colour. Actually, Sankey's vitrified buff tile possesses an unusual combination of properties. In addition to being highly vitrified and, therefore, extremely hard and long-wearing, it permanently withstands water, acids, and alkalis. Its surface is non-slippery; its pleasant buff colour is light-reflecting.

Such a tile is specially suitable as a flooring surface, particularly in chemical, food, and other factories, laboratories, etc. It can also be used for lining acid and other storage tanks. Two thicknesses of tile are supplied, the thinner being the more popular.—*J. H. Sankey & Son, Ltd., Refractories Division, Ilford, Essex.*

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**Classified Advertisements :** All small classified advertisements are charged at 1/9 per line (approx. 7 words) - minimum charge 10/6. A Box Number address occupies 2 lines, and a further 6d. is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

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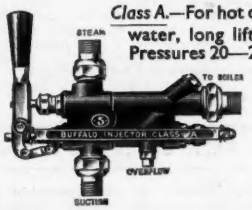


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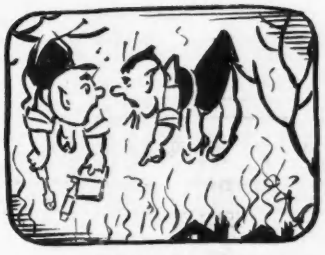

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## APPOINTMENTS VACANT

*The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.*

**A TECHNICAL SALES REPRESENTATIVE** is required for the Gasworks Plant Department of Newton Chambers & Co., Ltd., Sheffield. Applicants should be between 30 and 45 years of age and should have suitable qualifications in Gas Engineering. Experience in design and/or manufacture in the gas industry or with a contractor essential. In addition to a salary there is an efficiency bonus with travelling expenses and the use of a car. The post is superannuated. Reply to the Personnel Officer, Newton Chambers & Co., Ltd., Thorncliffe, nr. Sheffield, stating details of age, qualifications, experience and salary required.

**NORTH WESTERN GAS BOARD**

BURNLEY-COLNE GROUP

SENIOR SALESMAN—NELSON SHOWROOMS

**APPLICATIONS are invited for the above** position at a salary within Grade A.P.T. V (£445–£525 per annum).

Applicants must have had experience of showroom supervision and sales of appliances, and preference will be given to holders of the Institution of Gas Engineers' Certificate in Gas Salesmanship and Consumer Service.

The successful applicant may be required to pass a medical examination and to subscribe to such superannuation scheme as the Board may adopt.

Detailed applications, giving the names of two referees, should reach the General Manager, North Western Gas Board (Burnley-Colne Group), Parker Lane, Burnley, within 14 days.

*(Classified advertisements continued on Supplement 4)*

## APPOINTMENTS VACANT (ctd.)

### EAST MIDLANDS GAS BOARD

SKEGNESS

APPOINTMENT OF TECHNICAL ASSISTANT

**APPLICATIONS are invited for the position of** TECHNICAL ASSISTANT at Skegness. Applicants should be familiar with control of all gasworks plant and should possess a Higher grade certificate in Gas Engineering (Manufacture). Experience of Woodall-Duckham vertical retorts will be an advantage.

The appointment will be made within the national grade A.P.T. VI (£475-£555). The post is superannuable and the successful applicant may be required to pass a medical examination. A modern house is available on service agreement at a reasonable monthly payment.

Applications stating age, qualifications, present salary training and experience, together with the names of two referees, should be sent to the undersigned to arrive not later than September 30, 1952.

B. CLARKE,
Divisional General Manager.

Gas Offices,
Newland,
Lincoln.
September 12, 1952.

### WEST MIDLANDS GAS BOARD

NORTH STAFFORDSHIRE DIVISION

STOKE-ON-TRENT DISTRICT

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Applications, stating age, experience and service should be forwarded to reach J. S. Warrillow, Esq., Engineer and Manager, Stoke-on-Trent District, not later than 14 days after the appearance of this advertisement.

J. E. STANIER,
Divisional General Manager.

### WEST MIDLANDS GAS BOARD

WORCESTERSHIRE-HEREFORDSHIRE DIVISION

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STOURPORT-ON-SEVERN WORKS

**APPLICATIONS are invited for the above** position at a salary within Grade VI (£435-£480 per annum) of the salary scales of the National Joint Standing Committee for Intermediate Grades.

The person appointed will be required to supervise labour, Retort House and C.W.G. plant at a works with an annual output of about 120 million cubic feet. Applicants should preferably have had some mechanical training.

The successful applicant may be required to pass a medical examination and to subscribe to such superannuation scheme as the Board may adopt.

A six-roomed house is available at a reasonable rent.

Applications, giving age, present position and details of experience together with the names and addresses of two referees, should be addressed to Mr. C. F. W. Rendle, Divisional General Manager, West Midlands Gas Board, 12, St. Nicholas Street, Worcester, to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
Secretary to the Board.

**REQUIRED by Integrated Iron and Steel Works,** Fuel Engineering Department: TECHNICAL ASSISTANTS with knowledge and experience of gas distribution, holders, mains, boosters, furnaces, plant tests, etc: Reply giving details of education, experience and salary required to The General Manager (Iron and Steel Works), Stewarts and Lloyds, Limited, Corby, Northamptonshire.

**APPLICATIONS are invited for the position of** SENIOR DRAUGHTSMAN with a Company in the Midlands specialising in the manufacture and erection of gas-works plant, oil storage tanks, and general jobbing foundry work. Applicants must be between 25 to 40 years of age, and corporate members of either the Institution of Civil, Structural, or Mechanical Engineers, or hold an Engineering Degree. Previous experience with Gas-Works Contractors is an advantage, and knowledge of foundry work is desirable. The position has good prospects of future advancement. Small modern house will be available shortly at reasonable rent. Commencing salary £750 per annum. Strict secrecy will be observed. Apply: No. 119, *Gas Journal* 11, Bolt Court, Fleet Street, London, E.C.4.

### NORTH THAMES GAS BOARD

**JUNIOR DRAUGHTSMEN are required in the** gas works at Beckton, E.6., Southall, Middlesex and Mill Hill, N.W.7. Applicants should preferably be experienced in the maintenance of gas plant and conversant with the design of steel structures and mechanical equipment. Starting salary rang £415-£555 per annum. The appointments are of a permanent nature after a probationary period, and pension arrangements will be discussed with short list candidates.

Applications stating age, qualifications and experience, should be sent to the Staff Controller, North Thames Gas Board, 30, Kensington Church Street, London, W.8., quoting reference 666/41.

### NORTHERN GAS BOARD

SUNDERLAND DIVISION

**APPLICATIONS are invited from suitably** qualified persons for the following appointments:

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Applicants should preferably be experienced in the design, construction and maintenance of Gas Works Plant. A sound knowledge of civil engineering and structural steelwork will be an advantage.

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TECHNICAL ASSISTANT:

Applicants should be competent to control Gas Works Plant and should have Laboratory and Drawing Office experience.

The appointment will be subject to the conditions of service set out in the Agreement of the National Joint Council for Gas Staffs and the salary will be within either A.P.T. Grade IV (£290-£480) or V (£445-£525) according to age and experience.

—

The successful candidates will be required to pass a medical examination and the appointment will be subject to the provisions of such Superannuation Scheme as may be adopted by the Board.

Applications stating age, qualifications and experience together with *copies* of two recent Testimonials should be forwarded to the undersigned within fourteen days of the issue of this advertisement.

W. O. KIRKWOOD,
Divisional General Manager.

Fawcett Street,
Sunderland.
September 2, 1952.

### SCOTTISH GAS BOARD

GLASGOW DIVISION

VALE OF LEVEN DISTRICT

ASSISTANT MANAGER

**APPLICATIONS are invited for the position o** ASSISTANT MANAGER of the above Unde taking.

Candidates should possess the Higher Grade Certifi cate (Manufacture) of the Institution of Gas Enginee and have practical experience of Vertical Retorts, an the control of works plant generally.

The Salary for the post will be within Grades A.P.T V-VI (£445 to £555) per annum, of the National Salar Scales, with placing according to experience an qualifications, plus free house, coal and gas.

Applications, stating age, training, qualification and experience, and giving names of two referee should be addressed to the undersigned within fourtee days of the appearance of this advertisement.

T. A. ROWAN,
District Manager.

57, North Street,
Alexandria,
Dumbartonshire.

### SCOTTISH GAS BOARD

NORTHERN DIVISION

APPOINTMENT OF MANAGER

TO PETERHEAD DISTRICT

**APPLICATIONS are invited for the position o** MANAGER of the Peterhead District Ga Undertaking.

Applicants must be qualified Gas Engineers exper enced in modern Gas Works and Distribution practic in the operation and control of Continuous Vertic Retorts, and in the supervision and administration o a medium sized Undertaking.

The salary will be on Scale Provincial 'A' Grade (£645-£745) with free house, fuel and light.

The successful candidate will require to pass medical examination and will be subject to the provision of any superannuation regulations which may be made

Applications giving full particulars of age, qualifi cations and experience, together with *copies* of thre recent Testimonials, should be lodged with the under signed within fourteen days of the appearance of thi advertisement.

H. S. MILNE,
Divisional Controller.

50, Cotton Street,
Aberdeen.
September 3, 1952.

## MISCELLANEOUS

**WATER-CONTENT TEST — 3 MINUTES** — Already in use in the gas industry, "SPEEDY" MOISTURE TESTER gives accurate results with coal, coke and ash, and many chemicals. Needs n electricity; no skill. Portable. Write for illustrated brochure or order direct £24 10s. 0d. complete.—Thos Ashworth & Co., Ltd., (Dept. G.J.), Basket Street Burnley, Lancs.

## PLANT FOR SALE & WANTED

**FOR SALE:—Elbows ½ in. Gas, malleable—paral** lel thread. Large quantities available. Apply: Buying Department, The Parkinson Stove Co., Ltd., Stechford Birmingham, 9.

**WANTED:—REGULAR SCRAP GAS METERS** AND PARTS. Best prices paid. Offers to:— Mitcham Smelters Ltd., Red House Road, Croydon Surrey. *Tel.*: THOrnton Heath 6101 (Private Branch Exchange).

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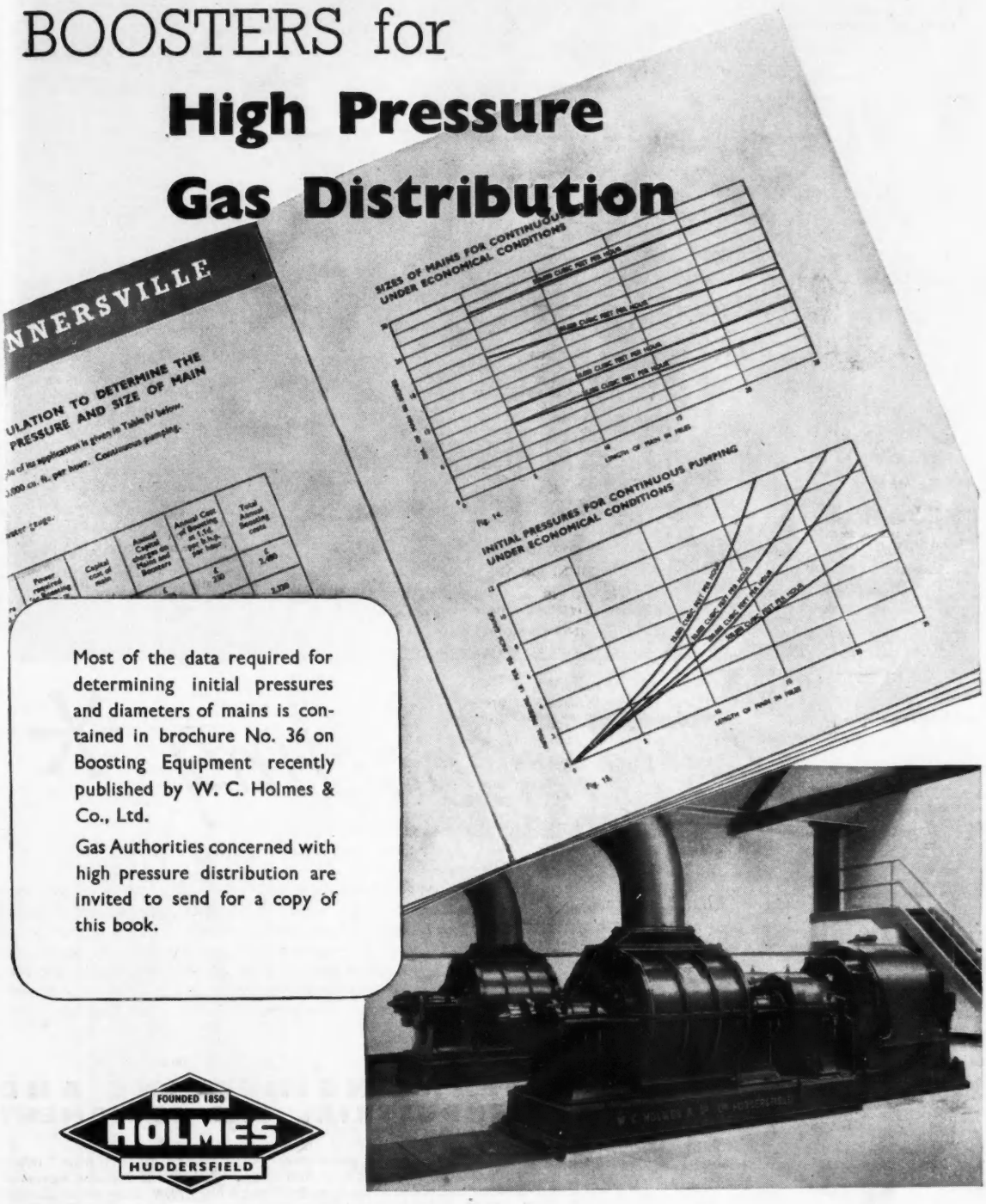
# BOOSTERS for

# High Pressure Gas Distribution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ULATION TO DETERMINE THE PRESSURE AND SIZE OF MAIN
SIZES OF MAINS FOR CONTINUOUS UNDER ECONOMICAL CONDITIONS
INITIAL PRESSURES FOR CONTINUOUS PUMPING UNDER ECONOMICAL CONDITIONS

Most of the data required for determining initial pressures and diameters of mains is contained in brochure No. 36 on Boosting Equipment recently published by W. C. Holmes & Co., Ltd.

Gas Authorities concerned with high pressure distribution are invited to send for a copy of this book.



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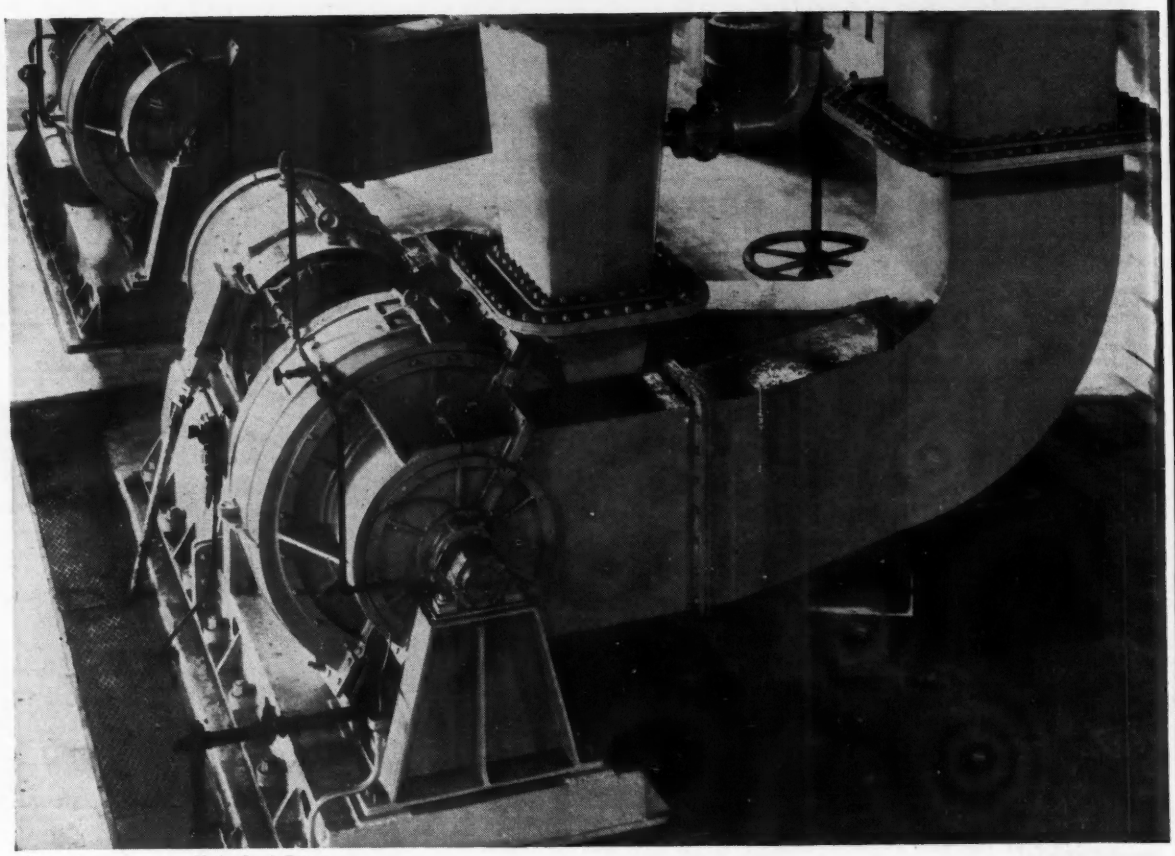
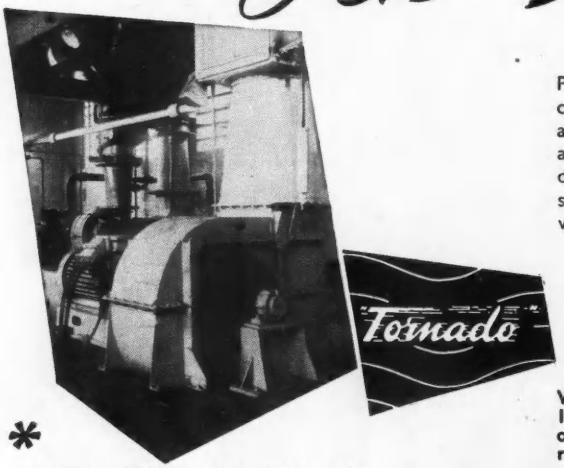


*Illustrations by courtesy of the South Eastern Gas Board and Messrs. Humphreys & Glasgow Ltd.*

# Gas Boosting *




*

**LARGE ILLUSTRATION:** *42" type 9 double width double inlet gas boosters.*

*DUTY: 1,010,000 c.f.h. producer gas at 60°F. Sp.gr. ·907 (air=1) raised to 104°F. saturated giving ·28" w.g. differential over inlet and outlet connections taking 138 H.P.*

**SMALL ILLUSTRATION:** *40" type 15 air blowers.*

| *DUTY:* | *Closed outlet* | *Delivery* |
|---|---|---|
| *Air quantity* | *nil* | *12830 c.f.m.* |
| *Speed r.p.m.* | *1480* | *1475* |
| *Static pressure* | *15.8" w.g.* | *13" w.g.* |
| *Power absorbed* | *13 B.H.P.* | *39 B.H.P.* |

Part of an installation at the East Greenwich Gas Works for the supply of South London's gas are the "TORNADO" gas boosters illustrated above. Each is capable of shifting over a million cubic feet of producer gas an hour, and each was supplied with cast iron gas tight casings with detachable segments for easy servicing, stainless steel impeller and shaft, self aligning roller bearings and flexible couplings. One of the boosters was arranged for motor drive and the other for steam turbine.

## FAN ENGINEERING AND INDUSTRIAL GAS EQUIPMENT

**We are manufacturing gas boosters which cover a range of from 5,000 to 1,500,000 cubic feet per hour, and if you are concerned with the movement of air or gas, ask us to send you Publication No. 5/8, a survey of the standard range of "TORNADO" high pressure blowing and exhausting fans.**

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MILL MEAD ROAD, TOTTENHAM, LONDON, N.17

'Phone: Tottenham 4522 (twelve lines). 'Grams: "Keithblac, Norphone, London."

434/11/GJ

Printed by Straker Brothers Ltd., E.C.2, for Walter King, Limited, 11, Bolt Court, Fleet Street, London, E.C.4. Wednesday, September 17, 1952

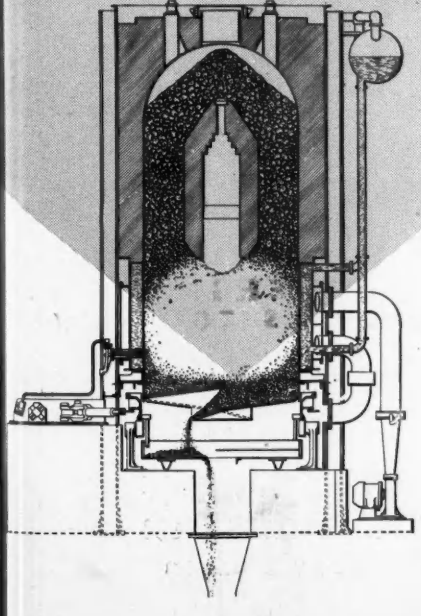
# WEST'S "HOT GAS" MECHANICAL PRODUCER

**HOT GAS EFFICIENCY 90%**

**REDUCES LABOUR COST**

**SAVES FUEL**

**DUST EXTRACTION 90%**



West's "Hot Gas" Mechanical Producer is a notable development in carbonization technique.

Fuel gas is drawn from immediately above the flare bed by a centrally placed offtake which is completely insulated, enabling full advantage to be taken of the sensible heat conveyed DIRECT to the setting. Ashes, removed by a revolving helical grate, show a marked reduction in combustible content. Constant depth of ash below the fuel bed is maintained by a novel device which controls the speed of the grate.

There is little variation in fuel gas quality. The producer is adaptable to various cokes and only low blast pressure is required.

# West's Gas
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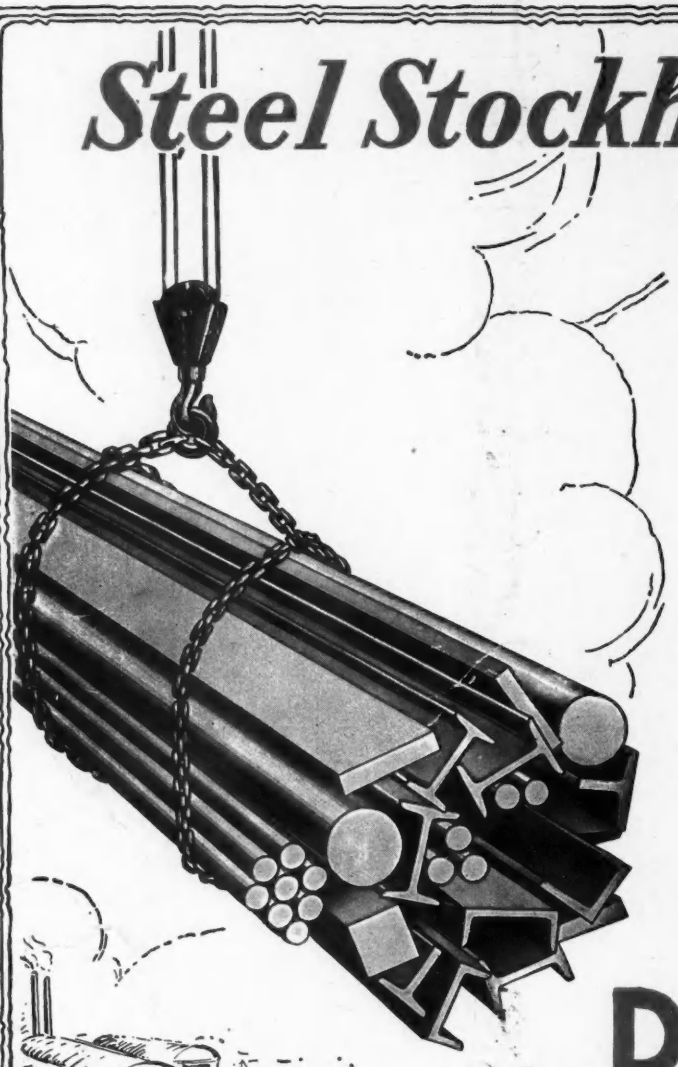
# Steel Stockholders



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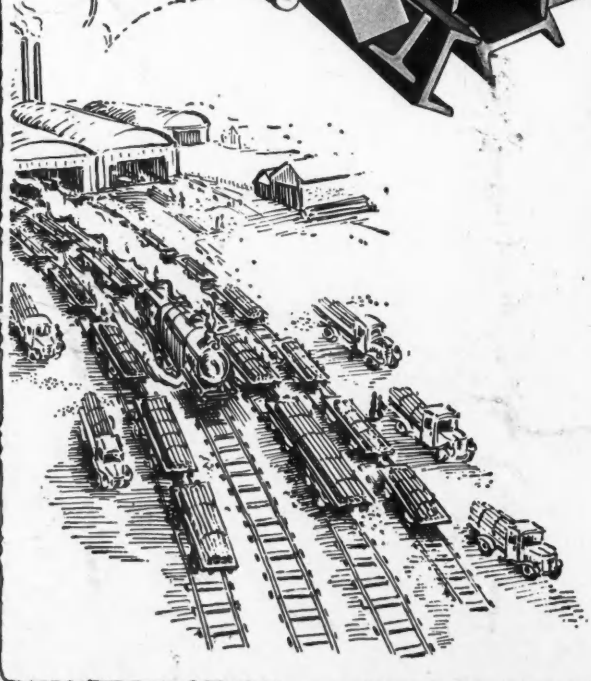

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